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February, 1921

No. 5

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# McCRAY FOR ALL REFRIGERATORS PURPOSES

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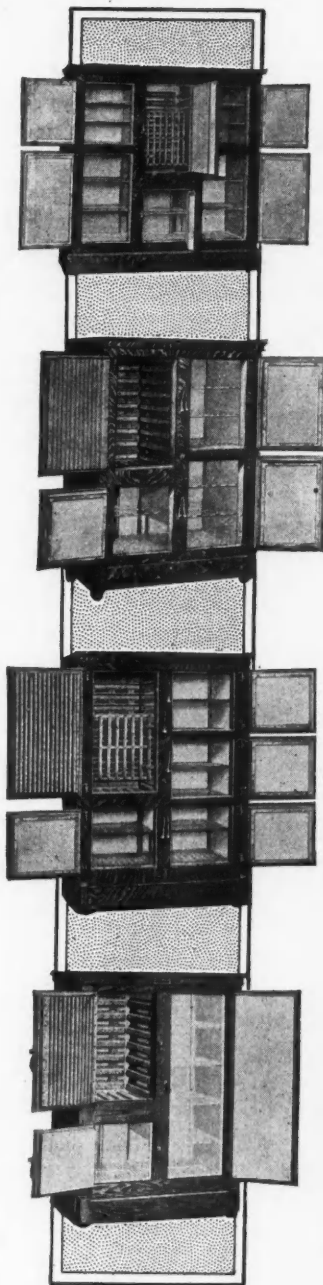
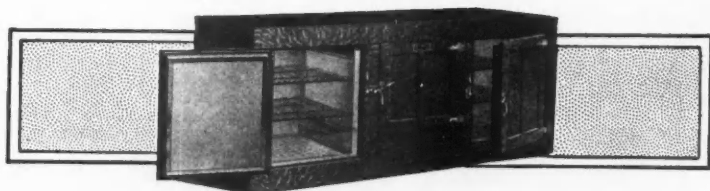
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*Salesrooms in All Principal Cities*



# Short Talks by the Editor



## The Builders' Best Customer

STATISTICS never lie but they often do not tell the entire truth. That is why building statistics are not a true exposition of what is really going on. They forget the great field of farm building which goes on in times of depression, high prices, and adverse conditions. The farmer as a class is mighty progressive and the wise builder knows where much business can be done. The farm building of the United States runs up into enormous sums annually and there is no reason to believe that 1921 will be an exception, as a matter of fact it should break all records. Sheds are bursting with grain from a record breaking crop, more animals will be raised because feed will be plentiful and cheaper and these animals must be housed. That means new dairy barns, new hog houses, new corn cribs, new granaries, new wallows, tractor sheds and other buildings around the farm.

Seize time by the forelock and get some of this building business that will be passed around this year. You can not expect them to hunt you out. 1921 will be prosperous to those who go after results and do not shirk. The day of waiting for opportunity to beg your assistance is past. Opportunity is now looking over the field of available candidates and choosing very discriminatingly.



## Do You Build Obsolete Homes?

BEFORE you start work are you making a new relic for the museum of what-used-to-be? Things that are new are often old—a seeming paradox, but let us see upon closer analysis if this statement does not hold water. Suppose you are building a new home, that is, the material in it is new—new brick, new woodwork, new hardware, etc.—but your plans, your ideas, your conveniences are out of date. What is the result? An old new house! Another contractor on the other hand undertakes to remodel an old home—he uses new ideas, installs new labor and space-saving devices—lo and behold! the old becomes new in his hands.

Moral—Don't built a house today that will be ready for the museum of antiques tomorrow. Only by keeping your ear tuned to the latest developments in build-

ing progress can you hope to build homes as nearly anti-obsolent as this progressive age will allow. If he does not, business will pass him by.

The modern home should be a fairyland of comfort and delight. It can be made so by the introduction of many accessories which are intended to save space or labor, in either case making home life infinitely easier and more attractive for the housewife. As a builder are you acquainted with them? If not, you should make a point to learn about them.

Each and all of them, and there are many that are comparatively small in physical dimensions but huge in consequence, are the factors that determine the longevity of a building—they are the barriers between it and the boneyard of antiquity.

The builder must hold his ideas to the spirit of the age. Build as Ruskin says, so that your ancestors shall point to your work with pride and say: "This is what our fathers built." Old homes can be saved from an early demise by the introduction of many of these devices at small expense. New or old, homes must stand the test—the great toll of obsolescence must be stemmed. The waste in housing space must be prevented at the source.



## Plenty of Cement

THE ratio of cement production to manufacturing capacity for the entire year 1919 was only about 54 per cent, and thus far in 1920 about 68 per cent. The capacity of all cement mills in the United States is 125,000,000 barrels or more annually. The most cement ever used in the country in any previous year was about 94,000,000 barrels in 1916. That is to say the country has never used as much as 75 per cent of its productive capacity, conservatively estimated.

There is now and will be plenty of cement to supply the country's needs as long as transportation and other conditions permit cement mills to operate reasonably near full capacity and to ship the finished product.



THE Forest Products Laboratory should receive adequate support from Congress not alone because it has demonstrated that every dollar invested in it is well spent in the interests of conservation, but also because it is the only institution of research available to the lumber and woodworking industries.

## Importance of Farm Building

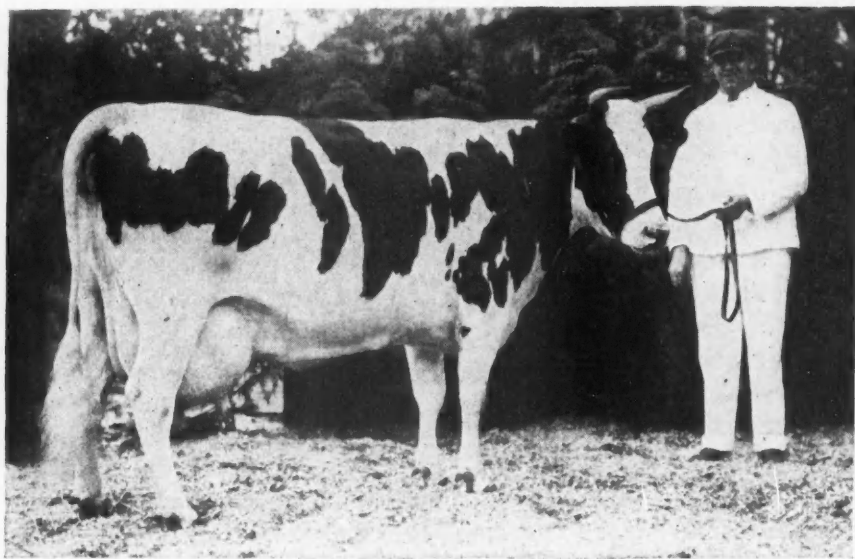
BECAUSE OF DRIFT OF RURAL POPULATION TO URBAN CENTERS MODERN BUILDINGS AND EQUIPMENT ARE NEEDED TO INCREASE PRODUCTION

**T**HE world must eat to live. This statement can be made without fear of contradiction, yet there is a decided tendency as revealed in the recent figures of the 1920 census for the farm population to move to the urban centers. As the situation stands today 51 per cent of the population of the United States live in cities and towns. That means more than half. Ten years ago the balance was in favor of the farm.

These figures bring to light a startling condition which calls for at least two definite lines of action. Farms now in operation must be brought to a higher

It is at this point that the builder contractor can assume a real important role and shoulder some of the responsibility of providing the world with food. Increased production is gained by efficiency of methods and materials. Only by the use of the most modern type of barns and other farm buildings and the most efficient machinery and equipment in these buildings can the farmer hope to make any headway in this tremendous battle! In this work the building contractor should stand as bulwark of support and real substantial advice. Upon his suggestions the success or failure of many farmers may depend. Upon their achievements depend the bulk of the population who now live in cities and from the standpoint of food products are non-producers.

Thus the responsibility of the builder becomes a double one. First, he must build better buildings to house the stock and grain in the most efficient manner. Secondly, he must install such equipment as is known to increase food production and stimulate results. On some of the following pages of the *AMERICAN BUILDER* details of such construction and equipment are delineated—they are the accepted and recommended types that have been proven worth while. No builder can afford to overlook the tremendous significance of this phase of building activity because



Segis Pietertje Prospect, New World's Record Dairy Cow, Who Has Just Completed 365-Day Test, Making 37,384 Pounds of Milk and 1445 Pounds of Butter Fat. She Is a Holstein Raised on the Carnation Farms, Where the Most Modern Methods and Buildings Are Used.

standard of efficiency in order to make up the loss in production entailed by the desertion of other farms. Conditions must be changed on the farms so that the counter-attractions of the larger urban centers will not be powerful enough to lure the men from the farm.

The same number and more people now live in the country than did ten years ago. Consequently the same amount and more food must be produced. Furthermore because of post-war conditions Europe is not able to produce as much foodstuffs as they did formerly and are forced to rely upon America for enough to keep them going until the next harvest. This throws a double load on the farmer of this country.

To carry this load he must produce more, and to produce more he must increase his present efficiency.

it runs up into enormous totals every year.

Furthermore, farm homes must be built along modern lines. Only when the farmer recognizes the important fact that his home must be a real place to live in can this movement to the cities be stopped or even curbed.

Again it is the mission of the builder to show him the way. The advantages of electricity, running water, heating systems, bathrooms, labor-saving equipment to lighten the burden of the housewife, furnishings that are not antiques, and cheerful, well-designed rooms that prove an oasis of comfort after the day's work is done—all these should be pictured in vigorous fashion. Once the fact is established that the city has nothing on the farm in comforts the exodus cityward will stop.



Efficient Farm Buildings Will Form an Effective Barrier Against Further Desertions of Farmers and Farm Workers to the Great Cities and Towns.

WE'VE PUSHED IT UP HILL BOYS, NOW LETS START 'ER ROLLING.



CARTOON BY ED. QUIGLEY

It's Tough Work Making the Grade, But What a Satisfaction Is Derived Upon Watching That Ball Gather up the Prizes on Its Way Down the Hill!

1921

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## Building in Japan

MODERN OFFICE, STORE AND BANK BUILDINGS ARE BEING ERECTED IN THE LARGER CITIES BY AMERICAN CONTRACTORS

By William A. Radford, Jr.

(On a Trip Around the World in the Interests of the American Builder)

**YOKOHAMA, JAPAN, January 5, 1921.**— While the beginning of the new year finds Japan in anything but a prosperous condition there seems to be considerable building going on in the larger cities. This is especially true of Tokyo. There I saw several large office, store and bank buildings under construction. Large signs displayed on the building conveyed the information that one of the largest firms of general contractors in the United States was doing the work. The buildings all are of the most modern type; of steel and concrete, and designed along the lines of present-day American structures—more attention paid to sturdy, fire-safe construction and less to artistic design.

The great demand for labor during the war sent wages sky high. Factories drew the youths from the rural districts to the cities; even girls were employed in factories for the first time in the history of Japan. A carpenter in Heroshima told me of the large wages he was receiving. They were 2 yen, 90 sen per day. That is equivalent in American money to \$1.44. That does not seem much to an American carpenter, but it is double what the carpenters here received a year ago, and more than double the pre-war wages.

Japan is essentially a manufacturing country, less than 12 per cent of its entire area being devoted to agriculture. There was prosperity everywhere up to last spring, when the bottom dropped out of the manufacturing industry. The slump hit Japan before it did the United States, but it hit a great deal harder. Now they are readjusting things; prices have come down some, but are still high, when compared with those of five or six years ago.

Two months in this country convinces an American that his home country is a pretty good place to be. The Japanese, as is well known, have studied American methods carefully and have been good at imitating

American goods. But like most imitations these products are lacking in quality, altho cheaper in price. Countries adjacent to Japan have found out this difference, and are willing to pay the higher price for the better American manufactured goods.

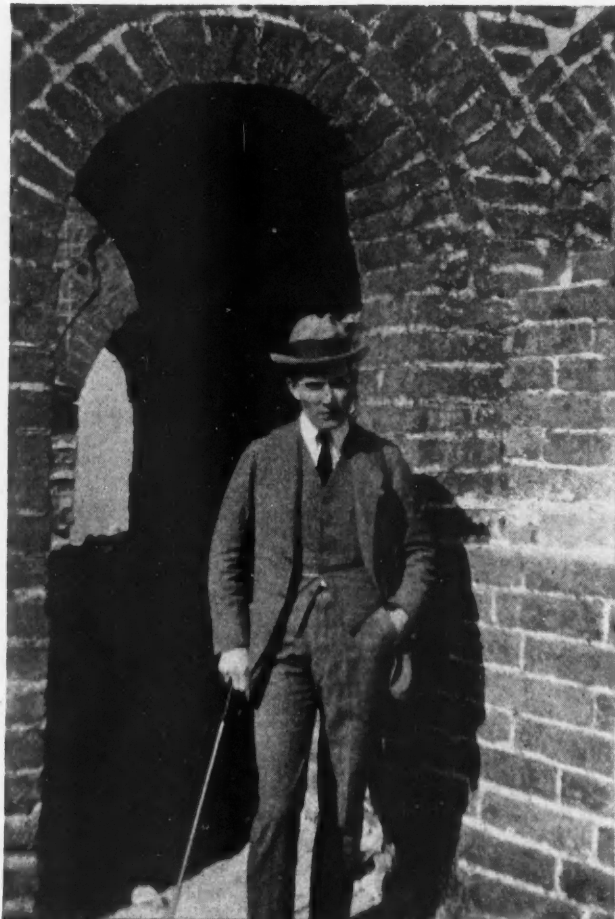
But as far as living conditions are concerned the Japanese have not learned anything from their study of the United States. Everywhere I go I meet young Japanese who have spent some time in the United States. Most of them have been called home for family or business reasons, but without exception they are not glad to stay in their own country.

These young fellows, tho, will be the making of this country in the long run. They have accumulated a great deal of knowledge regarding manufacture and modern machinery. This knowledge they are using effectively.

Pictures are difficult to secure in Japan. The military policy of this country makes the official suspicious of any foreigner who carries a camera. Perhaps I am mistaken but it seems as tho an American is singled out for special watching. There are prescribed areas in every city where cameras are not allowed. It is difficult for a foreigner to know and keep track of these limitations, consequently I have been chary about taking pictures.

Americans doing business in these countries have been hit rather hard by the slump. Many of them are packing up and have sailed for home. The other day I met an American who has been selling safety razors to the people of Straits Settlements, down on the Equator. He was on his way home. It would not seem as tho people would quit shaving just because business conditions are not good; but he said they have stopped buying razors, and he had closed up shop and was returning to the United States until things improved.

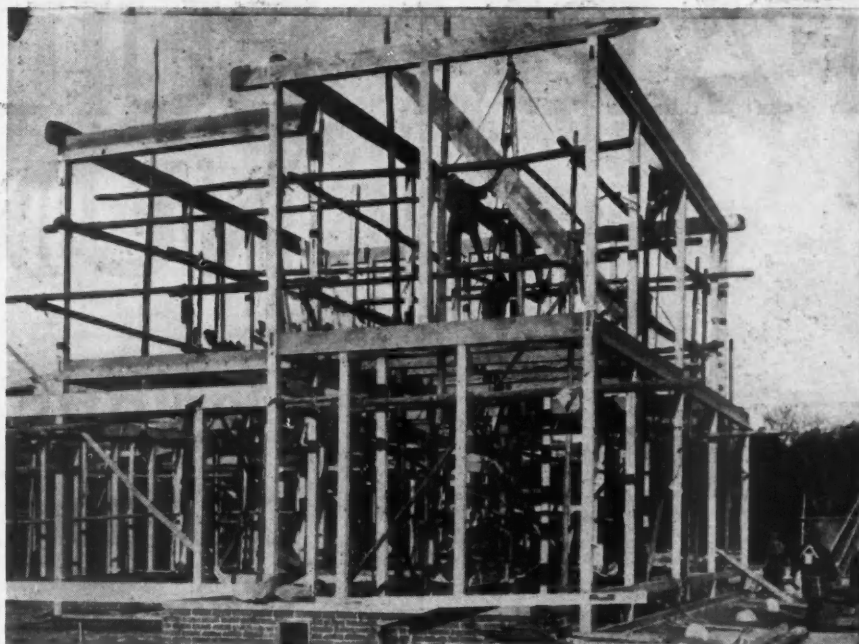
I confidentially look for a change for the better by



At the Gate of History. Wm. A. Radford, Jr., Standing in the Doorway of One of the Towers of the Great Wall, Built Over 2,000 Years Ago by the Chinese to Protect Themselves from the Barbaric Hordes of Mongolia. It Is 1,500 Miles Long and Built of Brick on a Base of Dressed Granite Shell Filled with Earth. It Is Thought to Be One of the First Construction Works in Which Mortar Was Used.

spring. In all of these countries the people prospered during the war. They still have money, more than they ever had before. They have had a taste of better living and better living conditions. That taste has whetted their appetites and as soon as things become more settled there will be a big demand over here for everything that makes for comfort, convenience and happiness.

Japanese homes are peculiar to the country. They have, to the American, an odd appearance, but are most attractive, nevertheless. In construction they are framed very much like the smaller frame houses in the United States, with the exception that the studs are omitted. Much of the heavy timbers come



The Better Class Homes in Japan Are Framed Much the Same as the Smaller Frame Houses in the United States. No Studs Are Used and the Walls Are Made of Mats That Fit Between the Timbers.



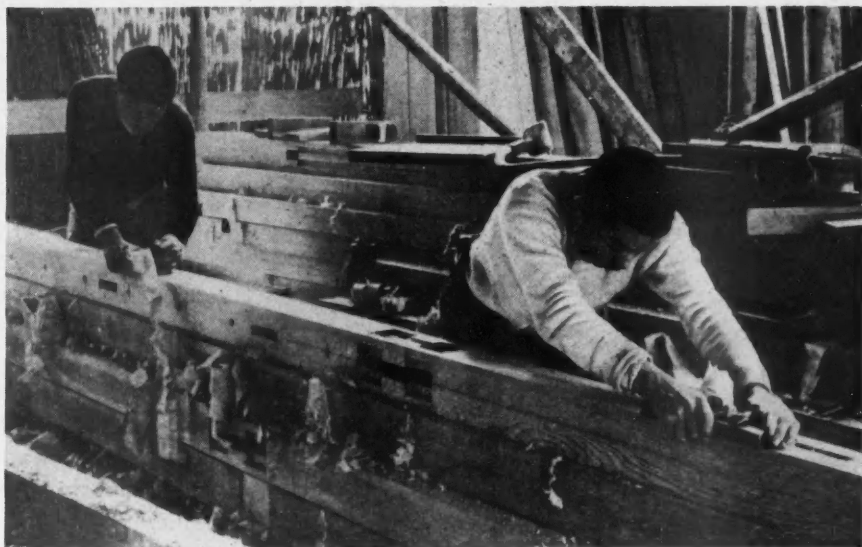
Putting the Finish Touches on Homes in Japan. The Roofs of the Houses Are Covered with Roof Tile.

from the west coast of the United States and are dimensioned by the Japanese carpenters. Until a comparatively recent time, all of the dimensioning was done on the job. Now, however, mills are in operation and the lumber is delivered to the job, much of it ready to be put in place.

After the frame is constructed the openings between the timbers are filled with woven mats. These mats are made of standard sizes in the mat-weaving plants, of which there are many. The weaving is done by men, women and children, and requires a considerable skill,

as the bamboos are placed remarkably even and tight. These mats fit into place exactly. After the walls are finished the roof is laid.

Carpenters' tools in general use in Japan are still crude, altho there are many fashioned after those used by carpenters at home. None of them made here are as efficient or of such good materials as the American tools. This, to my mind, creates a good market in this country for American made tools, which are increasing in popularity despite the greater cost than the Japanese manufactured tools.



Japanese Carpenters Now Dimension the Lumber in Shops, Whereas This Work Was Formerly Done on the Job. The Tools Have Been Greatly Improved During the Last Few Years. But Those of Home Manufacturers Are Not as Good by a Long Way as American Tools.



# FARM BUILDING NUMBER



## Designs and Details of the Front Cover Group of Buildings

**“W**HAT! You aren't considering the house first in your new group of buildings,” exclaimed the farmer who was a charter member of the league to make farm life odious. An expression of absolute astonishment filled his face.

“Yes, absolutely,” replied the progressive looking farmer who was discussing plans with his contractor. “The home is the cornerstone of success on the farm. Why build an elaborate superstructure and neglect the foundation? If I devoted all my attention to other

buildings and overlooked the needs of the home, I would only have a bitter awakening when the boys grow up and leave me flat.

“Why do you suppose your sons got out as soon as they grew?” he went on. “Why do you always have so much trouble keeping your help? Simple as the day is long. You have always tried to run your farm with as little expense as possible, but you went about to gain this economy in the wrong way. You sneered at modern equipment and put your family in a house that should be in a museum. No wonder the boys got sick of it. They worked from early morning until late at night without a bit of equipment to lift their load. Your wife had to put up with the same thing. I believe in profiting by others' mistakes. That is why I am building a real home, and some real farm buildings with the latest labor-saving equipment available. Little expensive, now—yes! But it is going to save me a whole lot of money and disappointment in a short time.”

There is no answer to this argument. It is the conclusion of men who have had experience.

The plans he was discussing with his builder will be explained in detail. This farmer began with the house shown on the opposite page—one of the attractive group shown on the front cover—an attractive story-and-a-half stucco home containing six comfortable rooms and a garage in a small wing on one side. The exterior of this appealing farm home is unusually well designed, with rambling gable roof sweeping down so as to cover the front porch which extends the full width of the house. The porch is supported by a solid stuccoed wall and wooden columns set in groups of twos and threes at the corners. The entrance is at the side. Above the porch is a roof dormer with two pair of double hung windows providing exceptional light for the bedrooms on the upper floor. The house is



Electricity Is Rapidly Becoming One of the Mainstays of the Farm. No More Kerosene Lanterns and Ill-Smelling House Lamps. A Turn of the Button and the Barnyard Is as Bright as Day. It Also Provides Power for Many Appliances in the Home and in the Barn.



28 by 32 feet, exclusive of porch and garage wing.

The front door opens directly into a large spacious living room, 27 by 13 feet, with an open brick fireplace at the right end. In considering the comfort and associations of the family in spare hours, a large, comfortable room of this type has a value that cannot be estimated in mere money. It has sentimental worth that should not be overlooked in any home.

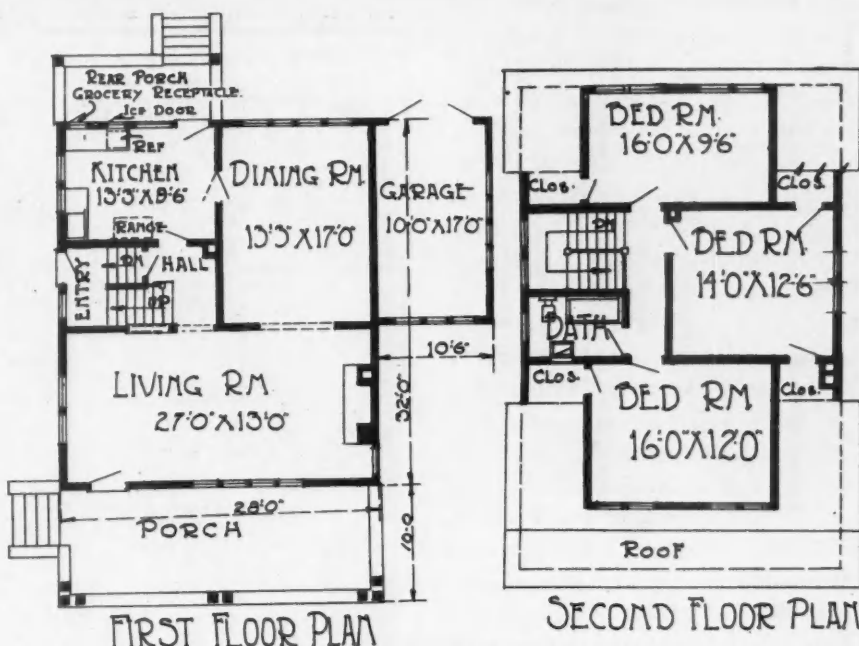
Doors lead from the living room into a hall on one side and dining room on the other. The latter is smaller in size than the front room, 13 feet 3 inches by 17 feet, but ample for the needs of a good-sized family. A door at one side connects it with the kitchen, which is modeled along the most modern lines of building and equipped with all of the conveniences of a city home. There is a range, sink with running water provided by a water-supply system in the basement, and refrigerator which can be iced from the outside. The rear porch is covered.

In the small wing on the right side of the house is the garage, 10 by 17 feet, very conveniently located and only a step from the house. In the cold weather there is no danger of the car freezing as the garage

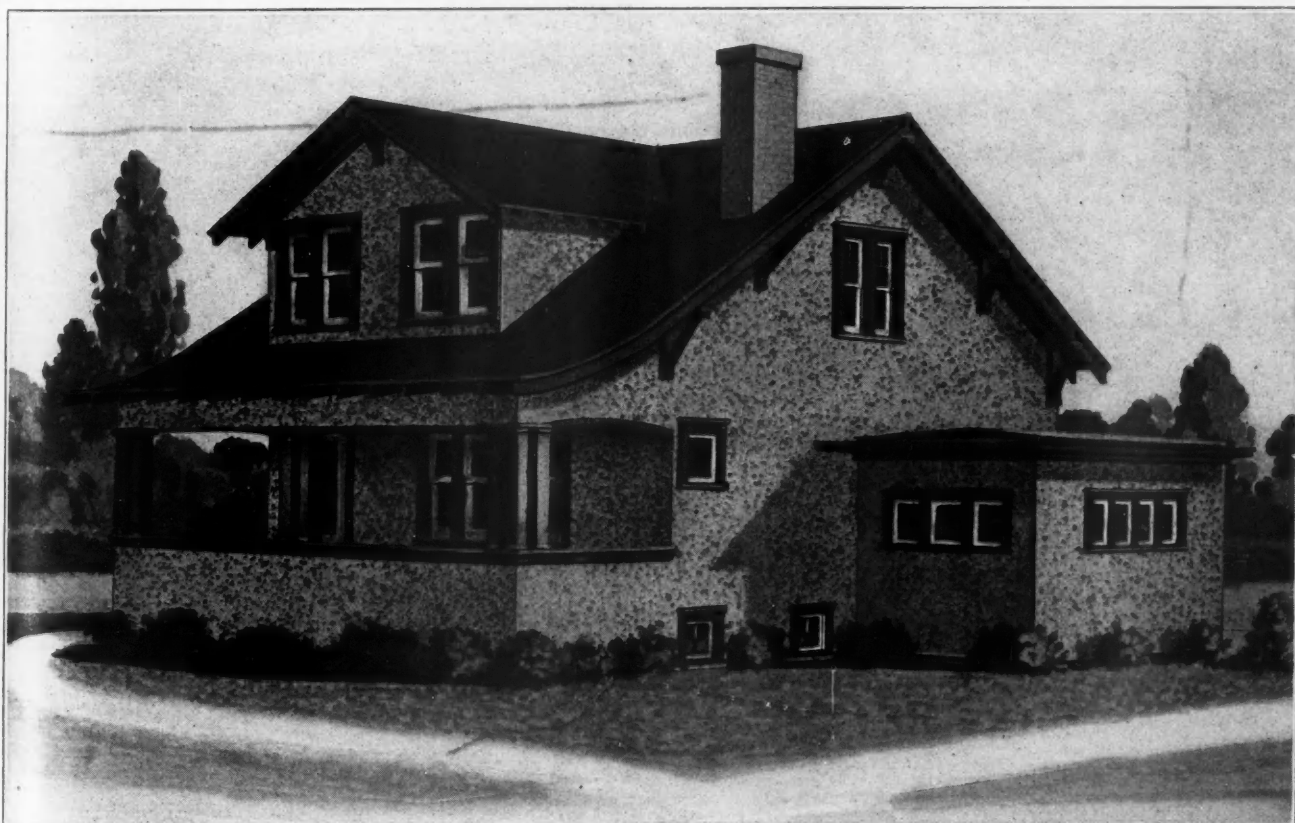
is heated from the main heating plant.

On the second floor the bedrooms and bathroom are located. There are three bedrooms in all: the front room, 16 by 12 feet; the side room, 14 by 12 feet 6 inches, and one in the rear, 16 by 9 feet 6 inches..

The bathroom is fitted with modern fixtures, and all the rooms are lighted by electricity from an electric lighting plant in the basement. None of the comforts of a modern home have been overlooked.



Floor Plans Showing Arrangement of Rooms on First and Second Floors of Front Cover Farm Home.



Attractive Story-and-a-Half Stucco Farm Home That Is Part of the Front Cover Group. It Contains Six Comfortable Rooms and a Garage Which Is Located in Small Wing on Side of House. This Charming Home Is Typical of Farm Homes That Are Now Being Built by Farmers Who Want Their Boys to Succeed Them and Keep Up the Work.

**Building the Dairy Barn**

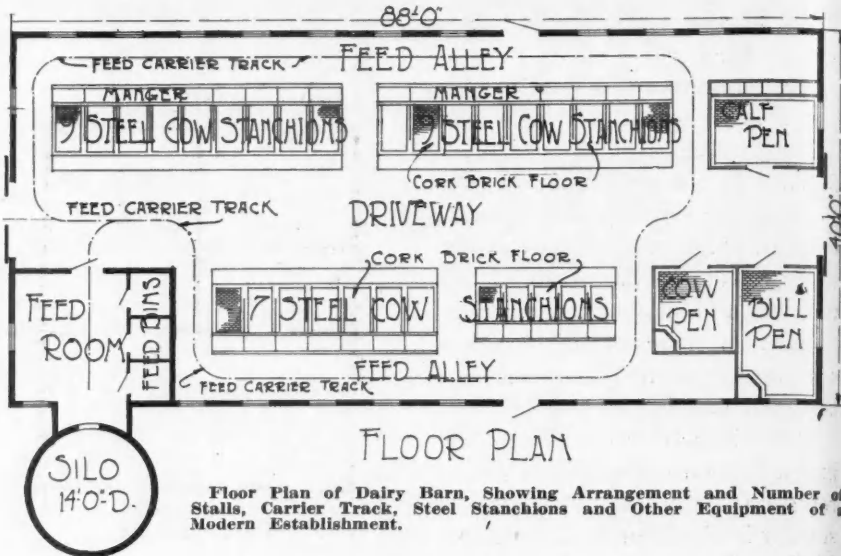
**I**N building the barn the contractor has a real responsibility which he owes to his client who depends upon him for advice. In this case the builder came up to all expectations as the finished work so eloquently testifies. He soon convinced the farmer that the best was the cheapest in the long run. Here we have a handsome, substantially constructed barn, large enough to hold twenty-five cows, with plenty of additional space for calf pens, feed room, cow and bull pens.

A glance at the exterior reveals a well-built frame structure, 40 by 88 feet, set on a solid concrete foundation and built with a high gambrel roof, allowing plenty of unobstructed room for a hay mow. The stable floor is exceptionally well lighted by a row of small windows, while the hay mow is taken care of by roof windows as well as several on each end.

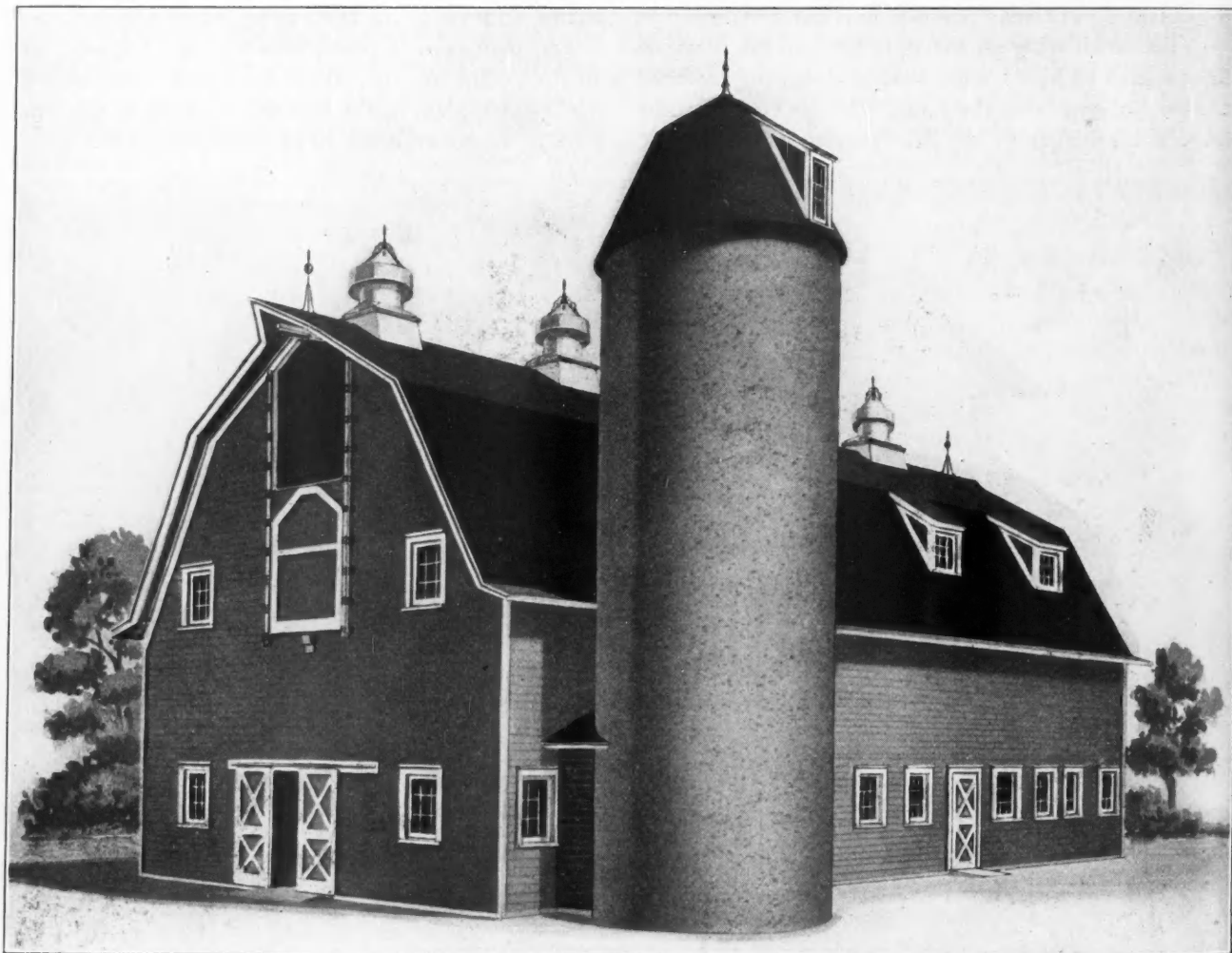
It goes without saying that all of the equipment in this barn is of the most efficient type. Look at those roof ventilators, lightning rods, and hay and stable

doors! They insure protection, sanitation and satisfaction to both animals and workmen. The silo is built of concrete; a big storage house 14 feet in diameter adjoining the feed room. (Complete details of silo construction are described in another part of this colored supplement.)

We have emphasized the responsibility which rests on the shoulders of the builder in work of this kind.



Floor Plan of Dairy Barn, Showing Arrangement and Number of Stalls, Carrier Track, Steel Stanchions and Other Equipment of a Modern Establishment.

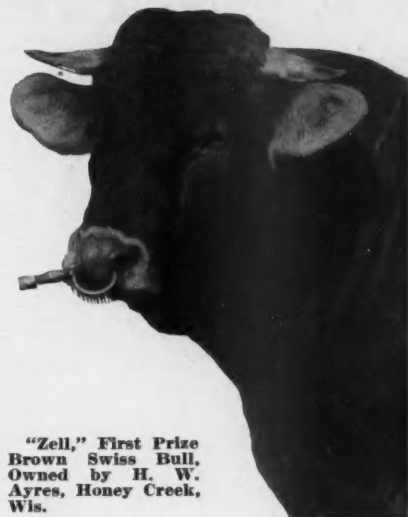


To Be Owner of Such a Handsome Barn Is a Credit. It is an Eloquent Testimonial to the Handiwork of the Builder and the Progressive Attitude of the Farmer. Note the Modern Equipment and Large Concrete Silo. This Building Is 40 by 88 Feet.

For Construction Details of This Barn See Blue Print Page 92



From the Litter Alley to the Manure Pile Via Rapid Transit. Carrier Systems Like the One Shown Here Are Being Installed in Modern Dairy Barns to Relieve the Boys and Hired Help of Much of the Burdensome Work Which Has Made Farm Work Unpopular.



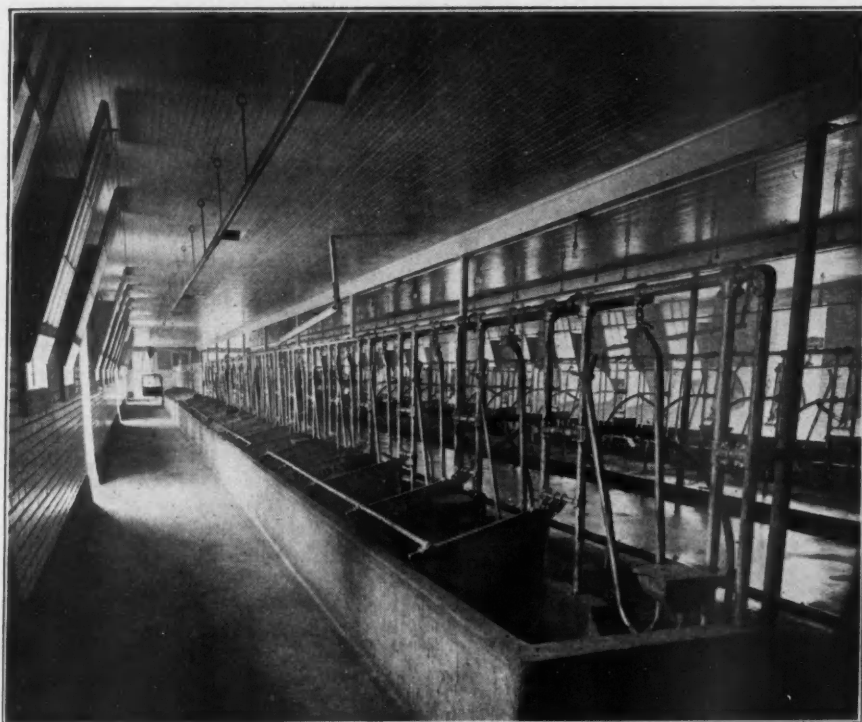
"Zell," First Prize Brown Swiss Bull. Owned by H. W. Ayres, Honey Creek, Wis.

barn, builders are installing litter and feed carriers operated on track fastened to the ceiling. These carriers provide an easy method of carrying feed to the various stalls and carrying litter and manure to the manure pit. They are one of the most effective means of keeping the help satisfied.

Nowhere is this more apparent than in the construction of the stalls and various pens. Proper equipment will mean success—proper arrangement of the stalls is vitally important. All farmers strive to have a contented herd because they know contented animals produce. They also want to have contented help because they stick and enjoy their work. These two factors depend indirectly upon the judgment of the builder of the farm buildings because he specifies equipment.

Dairy barns are now being built along scientific lines—building thought and modern equipment have made them real factors in the success of the farm. They are not only instrumental in increasing the production of the herd, but have been responsible for the betterment in the morale of the farm help who have heretofore been forced to work under discouraging conditions.

Cow stalls today are models of cleanliness and comfort. The stanchion as it is built is at once humane, secure and efficient. Concrete floors with gutters for litters and mangers and surfacing of cork brick or some other resilient substance in the stall are now accepted as the best flooring for cow barns. They are easily cleaned. In front of each stall the drinking cup has come to be an important item. Insuring a continuous supply of fresh, clean water, it is a stimulant needed to increase the flow of milk. Moreover, it relieves the hired man of the distasteful job of leading the animal to a trough several times a day in all kinds of weather.

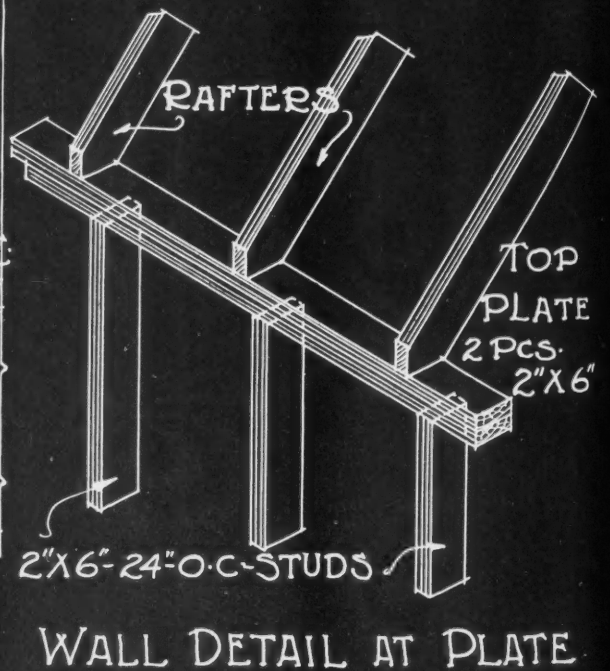
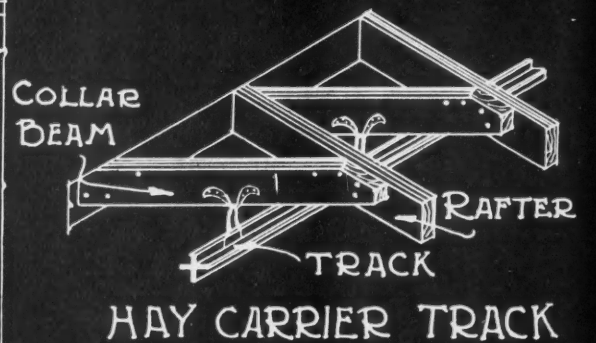
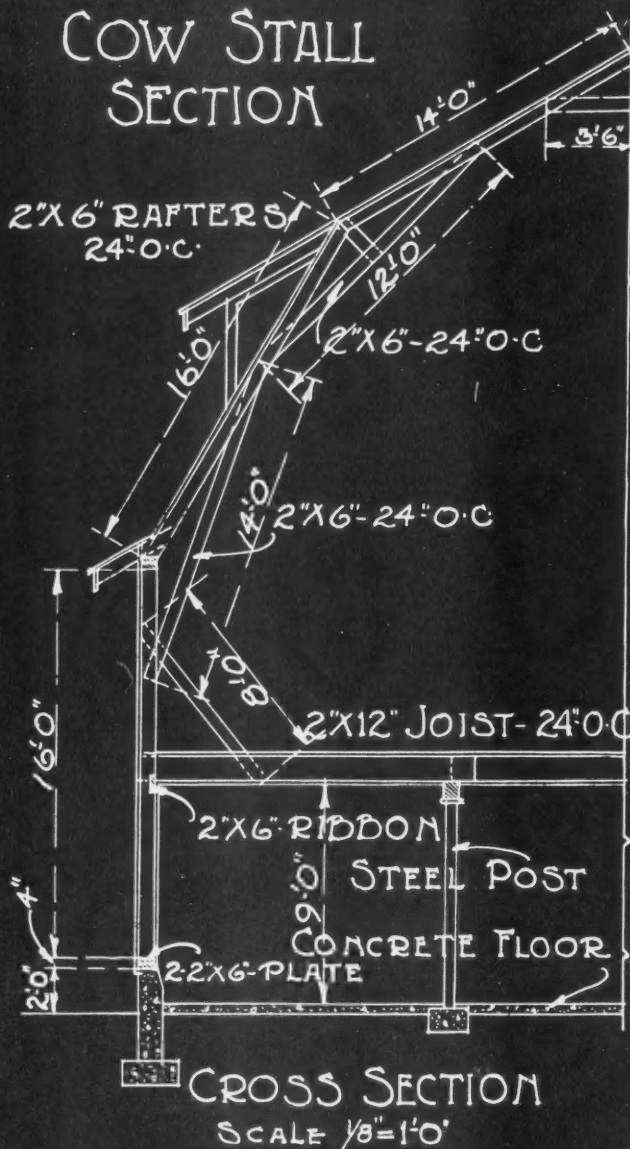
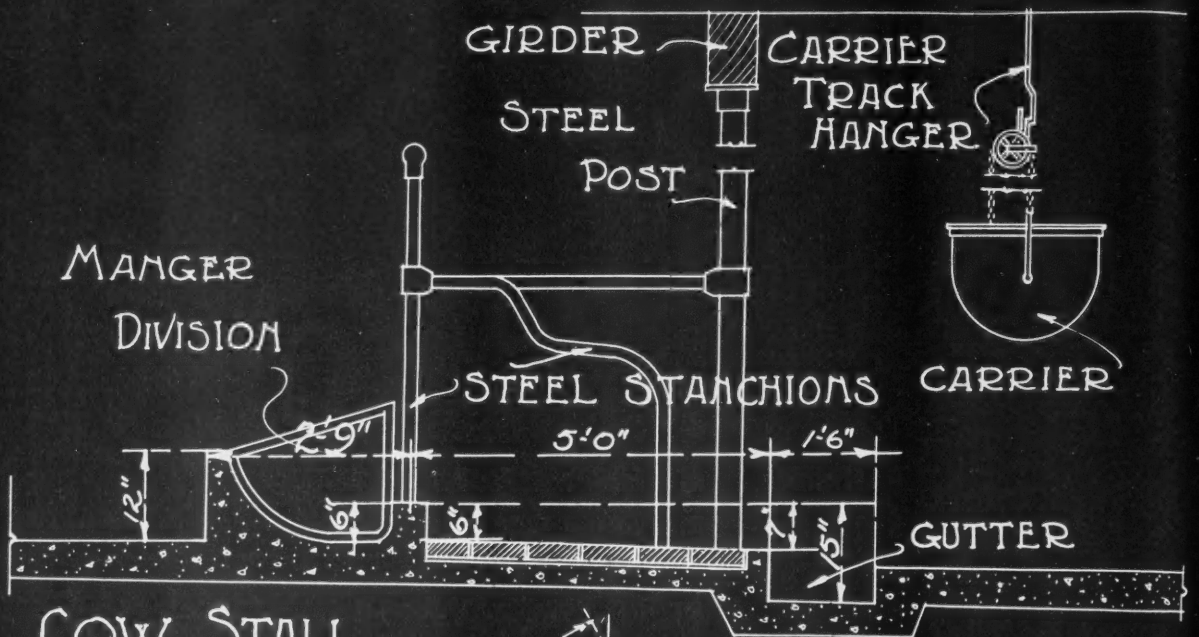


Interior of Dairy Barn at French Lick Springs, Ind. It Provides Food Products for World Famous Health Resort Owned by Thomas Taggart. Note the Stall Equipment, Mangers, and Drinking Cups. Also Track Carrier System and Wonderful Lighting Facilities. Build Your Barns This Way.

To relieve the men of many of the back-breaking jobs around the

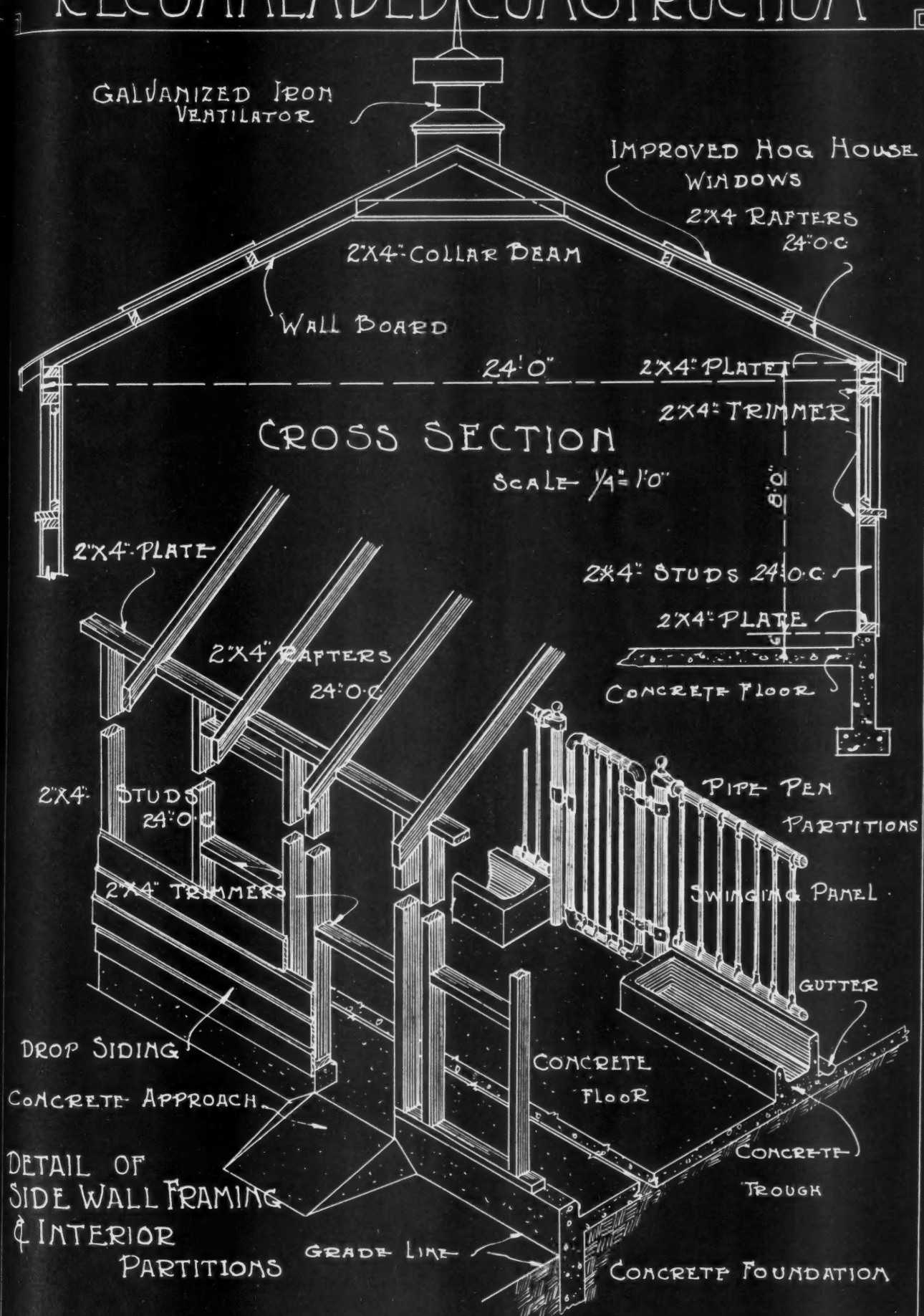


# RECOMMENDED CONSTRUCTION



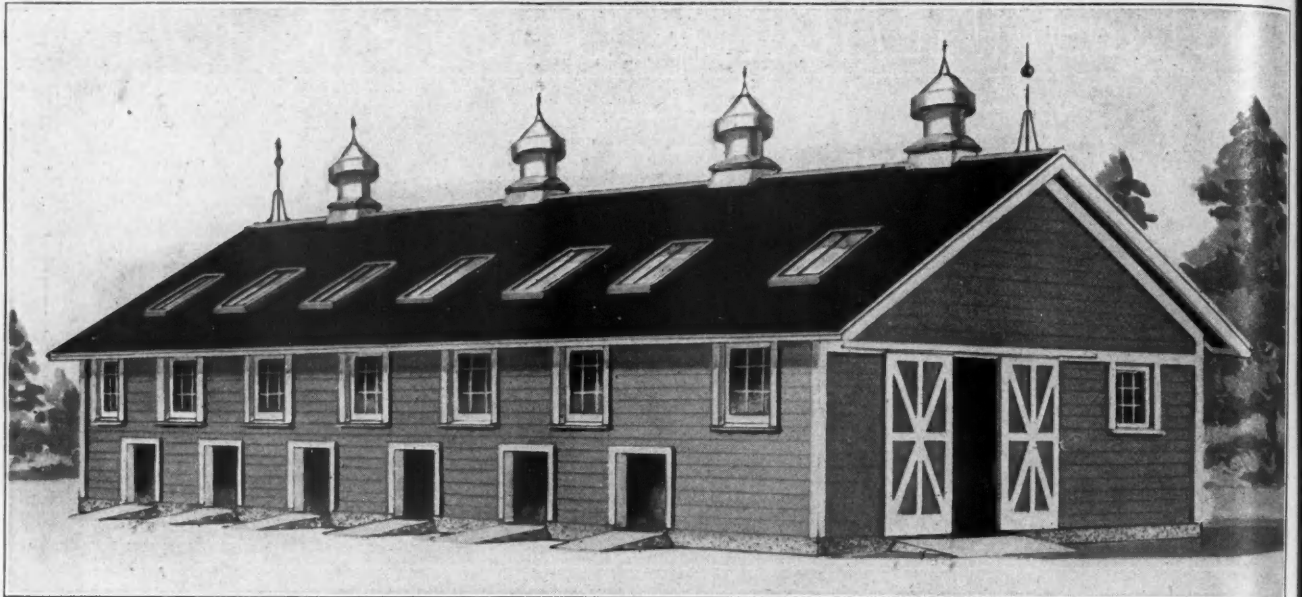
# GAMBREL ROOF DAIRY BARN

# RECOMMENDED CONSTRUCTION



# HOG HOUSE DETAILS



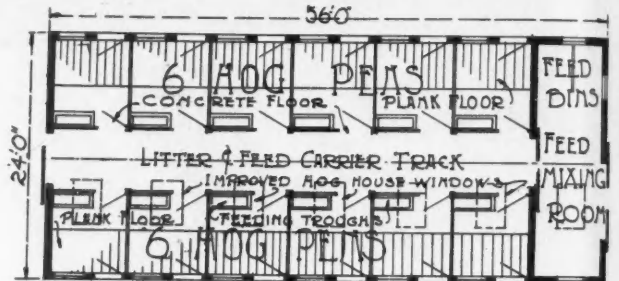


Front Cover Group Hog House of Advanced Type. Showing Special Roof Windows, Efficient Ventilating System and Attractive Appearance. The Hog House Is Becoming One of the Important Buildings in the Farm Group. It Is 24 by 36 Feet.

**How the Hog House Should Be Built**

**N**EXT on the building program is the hog house. Many a time we have heard the words, "They kept pigs in the parlor," spoken in jest, but today this expression takes on a significant meaning. Pigs are living in parlors—"pig parlors," to be sure, but compared with the houses formerly used, they are palaces. The lowly porker has been neglected for a long time but relief is in sight. Once allowed to wallow around in filth and seek shelter in any kind of shack, he is now a carefully protected animal. Modern hog houses are built with several ends in view. They are built to provide warmth, comfort, and light. In the accompanying drawing one is given an excellent idea of how building houses for hogs has developed. (Details of construction are shown on page 93.)

This particular hog house, which is the last word in construction, contains all of the features that building thought has been able to devise. Especially important is the lighting and ventilating of the hog house



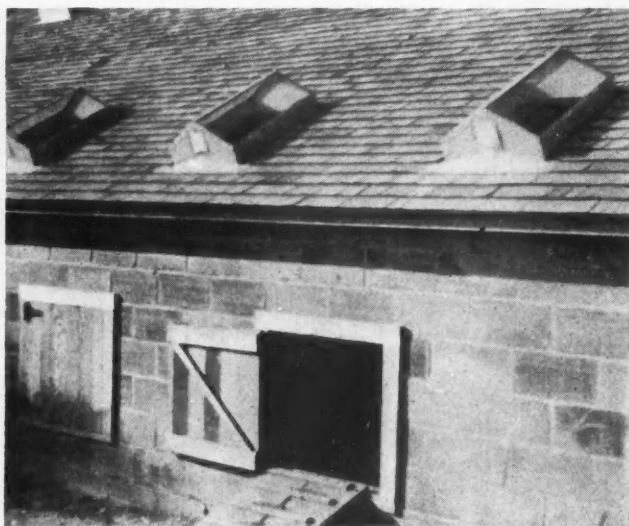
**FLOOR PLAN**

Floor Plan of Front Cover Hog House. It Contains Twelve Hog Pens, Feed Room and Feed Bins. The Floor Is Concrete Throughout with a Plank Floor Covering in the Pens.

to protect the animals from disease arising from filth, and filth arising from darkness. The windows on the side of the building combined with special roof windows make the hog house light at any time in the day. No matter what hour, the sun strikes some window and provides light for the interior.

To draw off the foul air, which is inevitable, the roof ventilators are installed. There is room for twelve hog pens, feeding bins and feed mixing room in this building which is 24 feet by 36 feet. The pens are partitioned off by steel partitions with steel gates; the floors are plank in the pens. A litter and feed carrier track running thru the center facilitates the handling of feed and litter and lightens the burden of the farmer and his help.

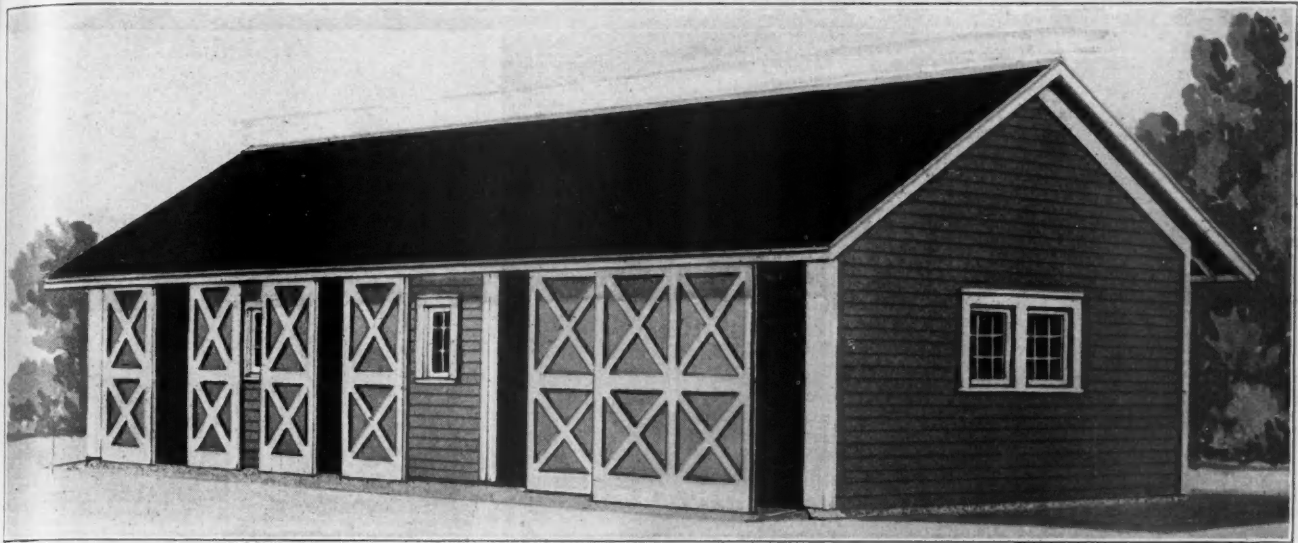
There is nothing temporary or makeshift about this hoghouse. It has been built of good material with a substantial concrete foundation and floor except where planks have been added in the pens. Leading up to each of the small doors on the side of the building are concrete runways. The large end doors are hung on sliding door hangers which greatly facilitate the operation of them. Lightning rods have been installed to protect the building and stock against fire and storms. Moreover, it is an attractive building and in keeping with the general harmony of the farm building group.



Special Hog House Windows Have Figured Prominently in the Development of This Type of Construction. One Type of Roof Window Which Is Used Is Shown in This Picture.

*For Construction Details of this Hog House See Blue Print Page 93*





Front Cover Group Implement Shed—the Farmer's Garage for His Machinery and Implements. Built at a Very Reasonable Cost, This Shed Will Save Many Dollars by Protecting Machinery from Rust and the Elements. Note the Sliding Doors. Size, 24 by 60 Feet.

**Implement Shed and Farm Garage**

SO far, all of the front cover farm buildings have been discussed except the implement shed or farm garage as it often is called. This is the small shed-like structure in which the farmer keeps his implements, tractors, automobiles, trucks, and any other farm machinery he may own. While not pretentious in design this building is one of the important ones and should not be overlooked by the builder who is drawing up the plans for a group. It is the means of saving many hundreds of dollars in machinery which would be ruined if not properly protected from rain and other elements.

The front cover implement shed is built of frame with a concrete foundation and floor. It is 24 feet by 60 feet and has a gable roof. The important part of the implement shed is the doors. Unless they are built correctly they will be a hindrance in getting the machinery in and out of the shed. To provide against any such condition, the doors on the front cover building have been hung on tracks by means of easy sliding hangers. This arrangement enables the farmer or his help to open and shut the doors very easily without any jamming.

Windows have been built at advantageous positions on all sides, thus providing plenty of light and ventilation. (Details of construction are shown on page 96.)

The progressive builder should find much information of value in the details and plans of the front cover



FLOOR PLAN

Floor Plan of Implement Shed and Garage Shown on Front Cover.

group of farm buildings as explained here. He should never overlook the fact that the farmer is not only one of his best customers but his most consistent one. There is some building to be done at all times on the farm because the farmer is a man of action and his needs are continually growing. The builder's responsibility is to impress him with the value of modern construction and equipment and steer him clear of the old "penny wise and pound foolish" ideas on economy. Better buildings, better equipment and better farm homes will bring their worth tenfold in real happiness and contentment, greater production, satisfied help, and larger profits.



**Building Material Industry in France Revives Rapidly**

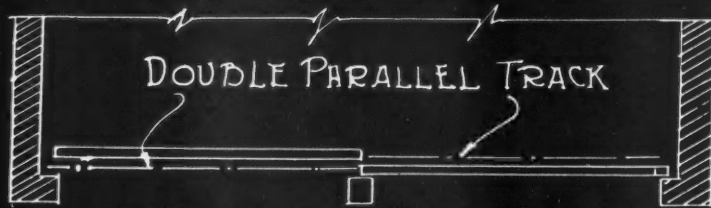
PLANTS devoted to this industry were numerous and very prosperous in the North and East of France before the war. At the signing of the Armistice, altho 62 of these plants had been destroyed it was obviously necessary to reconstruct them with the greatest speed. This work has been fully accomplished. The brick works of the devastated regions produced, before the war, 1,200,000,000 bricks per annum. They have produced 1,800,000,000 bricks so far this year, and their production in 1921 will be 2,523,000,000 bricks. The production of tiles, which before the war attained 290,000,000 a year, has now reached 170,000,000.



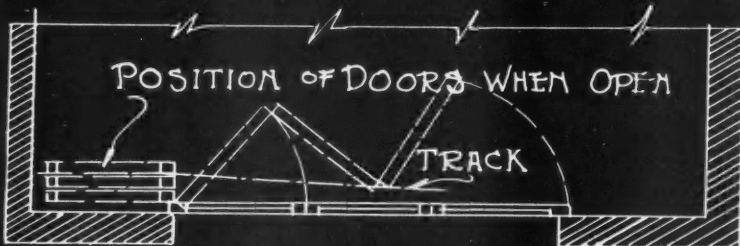
**CONTRACTORS**—Are you selling electric light plants, heating systems, lightning rods, and other building accessories? How do you do it?—that is what hundreds of contractors would like to know. Tell them about it in the *AMERICAN BUILDER*. Everybody likes to read about enterprising, successful men. Stories of this kind are inspirational. Send pictures of your office, salesroom and advertising displays.

**For Construction Details of This Implement House See Blue Print Page 96.**

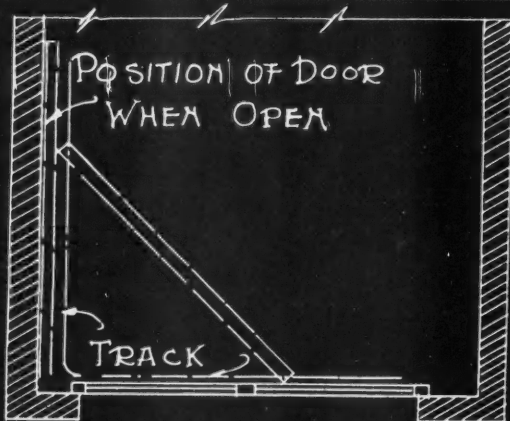
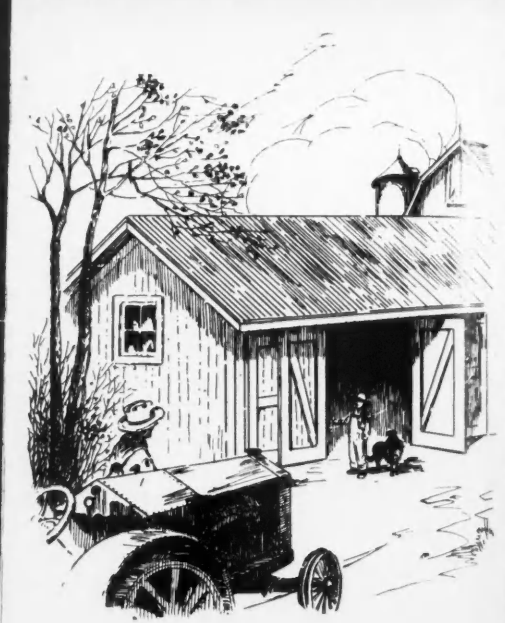
# RECOMMENDED CONSTRUCTION



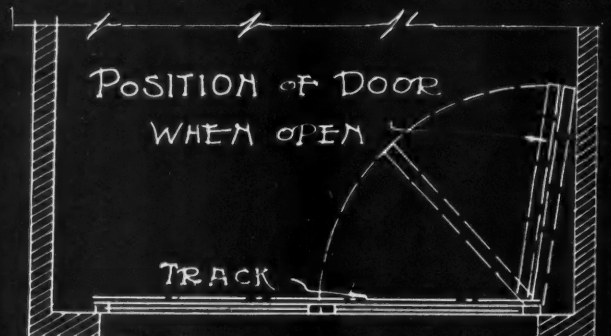
PARALLEL SLIDING DOORS  
USING DOUBLE TRACK



COMBINATION SWINGING & SLIDING



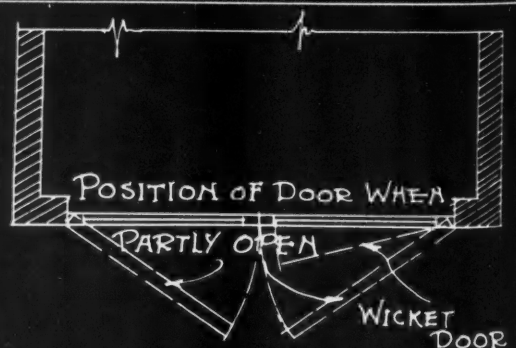
CURVED CORNER DOOR



DOUBLE DOORS  
TO OPEN TO ONE SIDE



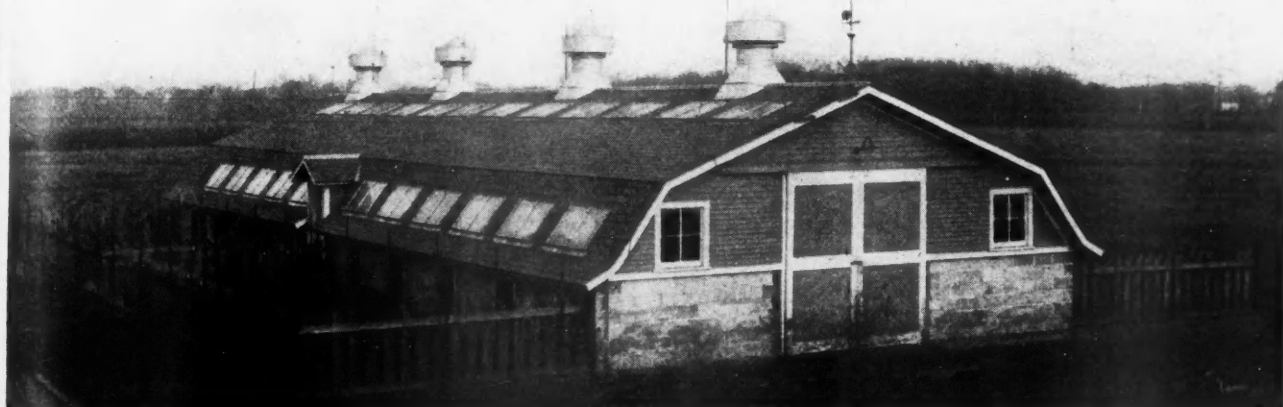
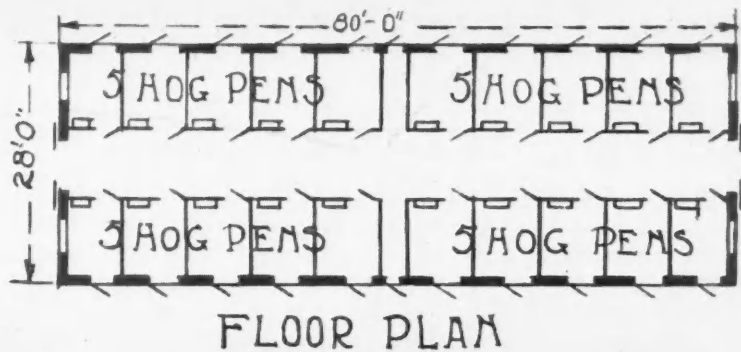
TRIPLE SWINGING DOORS



DOUBLE SWINGING  
DOORS WITH WICKET DOOR

# TYPES OF IMPLEMENT BLDG. DOORS





**M**ODERN "HOG PARLOR" ON JUST-A-MERE STOCK FARM. Owned by M. T. Anderson, breeder of Big Type Duroc Jersey swine at La Porte City, Iowa. The hog house is 28 by 80 feet, hollow tile construction with gambrel roof and special roof windows. The lower picture of the interior shows the wonderful lighting effect produced by the windows at 3:30 P. M. when this picture was taken. There are 48 windows in all, and 20 modern steel pens  $7\frac{1}{2}$  by 9 feet. The main alley is  $8\frac{1}{2}$  feet wide while the smaller alleys leading to the feed yards are 3 feet wide.



## Circular Concrete Construction on the Farm

MONEY-MAKING OPPORTUNITIES ARE PRESENTED TO THE CONTRACTOR IN THE FIELD OF SILO AND CIRCULAR TANK CONSTRUCTION

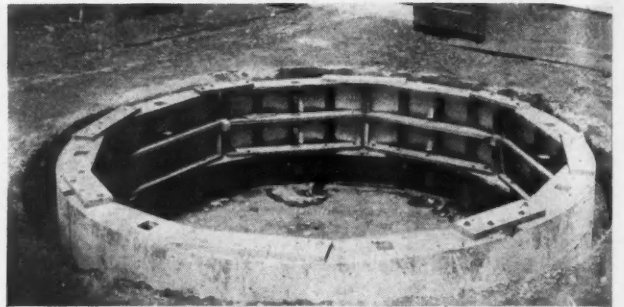
By A. J. R. Curtis

PERHAPS one of the best possible fields of expansion for the general contractor in the small city or rural community lies along lines of circular silo and tank construction. State agricultural colleges have estimated that the market for silos is less than 20 per cent supplied, with no allowances made for replacements, which in the next few years will be high. And service as receptacle for the storage of silage is only one of a number of uses to which the reinforced concrete silo is well adapted.

Every concrete silo constitutes a suitable pedestal for a water supply tank, the height of the silo giving the water pressure needed to insure fire protection and force water to second or third floor bath rooms where desired. The flat roof of the silo, of reinforced concrete, constitutes the tank floor, and the tank walls are continued up in the same manner as silo walls, but are reinforced more heavily and additional precautions taken to get absolutely watertight construction. The water pipes, enclosed in approved frost-proof packing, are up within the silo or the chute.

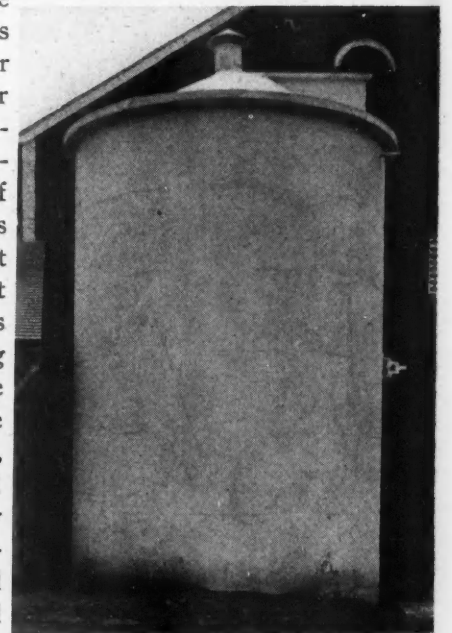
The quite general use of concrete silos by the manufacturers of portland cement as storage for their product, should constitute sufficient proof that well constructed silos of this type are entirely suited for the storage of grain. The greater number of the large terminal elevators are of concrete and tanks made of this material, circular in shape, have been meeting with constantly increasing favor for country station and farm elevators. Grain tanks are made like silos,

being constructed with the same forms, but reinforced especially to take care of grain pressures. The "special work" about the elevator may be built of frame or of concrete cast in straight forms, the latter construction having the advantage of additional fire protection and being proof against vermin.

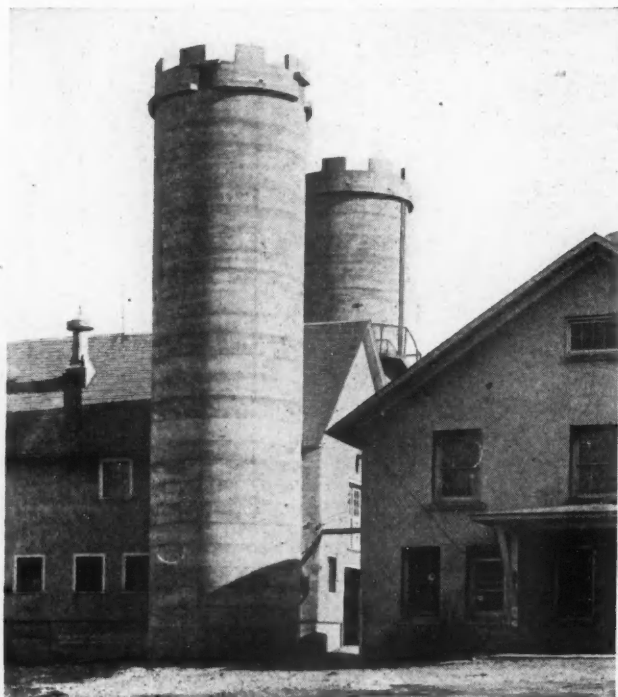


Circular Silo Form Used by Farmers Where Contractors Are Not Available and Occasionally by Contractors for Constructing Tanks of Odd Sizes Not Justifying Purchase of Steel Forms. For Almost All Circular Work, However, Commercial Steel Silo Forms Are Greatly Superior and More Economical.

One of the more recent extensive uses of the concrete silo is in the field of rock fertilizers. During the past three years a considerable number of silos have been erected in rural communities for the storage of phosphate rock. The tanks are owned either by fertilizer dealers or by co-operative organizations of farmers. In this field, and in that of coal pocket construction as well, building operations are practically the same as for silo, special detail plans necessary for accommodating special machinery and chutes, being furnished by the manufacturers of conveying machinery.



Farm Water Supply Tank, on the Place of Bourner and Son, Near Canton, Ill. Built in 1916, by Sutton and Moore, Silo Contractors.

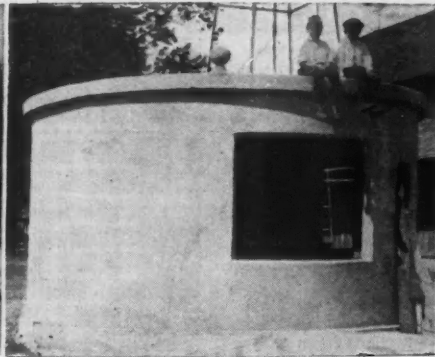


Twin Monolithic Silos With Flat Slab Roofs, on a Dairy Farm Where Efficiency Counts. In Several Years of Use the Owner Has Paid Out Nothing for Repairs or Maintenance. The Silo Field Offers an Attractive Specialty for the General Concrete Contractor.

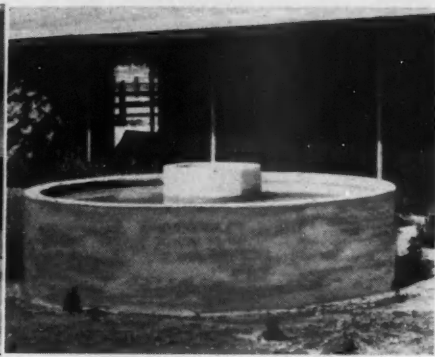
Among the smaller structures which may be built profitably by the contractor with a silo form, are milk and ice houses, water supply and stock tanks and small buildings for innumerable purposes. The walls of silos and other structures built with silo forms are usually 6 inches in width and commercial sizes of circular steel forms are arranged to give inside diameters from 8 or 10 feet up, increasing by intervals of



Circular Farm Ice House Built with Steel Silo Forms. Such Ice Houses Are Economical and Almost Indispensable on the Modern Farm, and Should Furnish Silo Contractors with a Considerable Volume of Business.

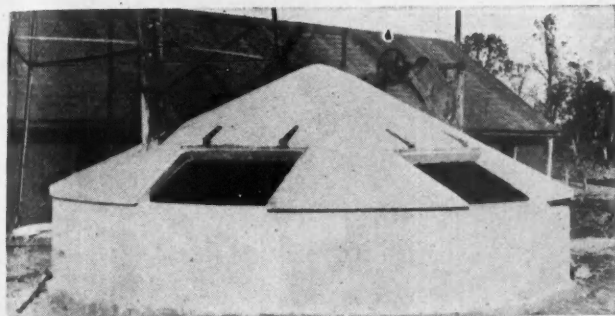


A Monolithic Concrete Stock and Water Supply Tank Built With Steel Silo Forms on the Farm of T. W. Coffman, Poil, Ill., by the Buser Concrete Construction Company of Mt. Morris, Ill. One of the Many Circular Farm Improvements, Easily Built with Silo Forms.



Watering Tank at a Western Feeding Station, Illustrating an Adaptation of Circular Silo Forms. This View Was Taken on the Adohr Cattle Ranch, Near Los Angeles.

2 feet. The concrete mixture most commonly used contains one sack of cement to 2½ cubic feet of sand and 4 cubic feet of pebbles or broken stone. The reinforcing usually consists of a system of steel hoops



Covered Circular Stock Tank with Water Heater Built with Steel Silo Forms by George W. Quick, Tiskilwa, Ill. A Silo Roof Form Was Used in Forming the Tank Roof.

supported on vertical steel rods or woven wire reinforcing fabric in continuous bands around the silo. The weight and spacing of the metal varies according to the pressure of the substance which the tank is to hold. The AMERICAN BUILDER will be glad to supply contractors with the reinforcing tables commonly used, on request.

Farmers realize generally that where the services of a reliable contractor can be secured it is desirable to have the silo built under contract. Considering the quality of the work, the actual cost of the silo built under contract is no greater than it would be if the owner built it himself. The contractor who desires to specialize in silo construction work should begin a quest for contracts early—February is not too soon.

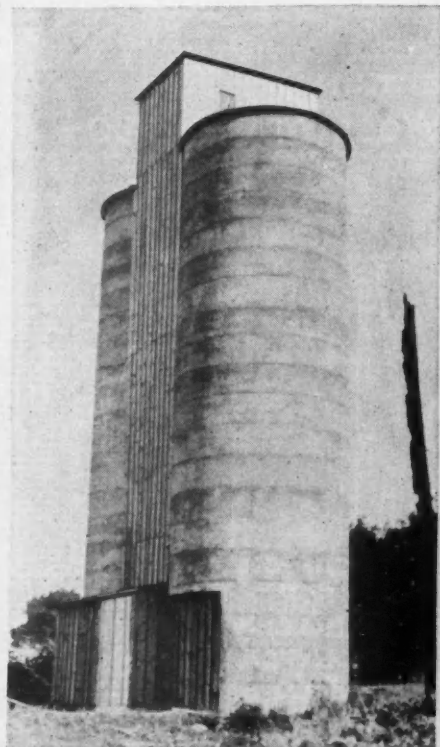
Much help can be obtained usually from the state college of agriculture, county agricultural agents, farm bureau and farmers' institute

organizations. Many country agricultural agents make a practice of holding silo tours annually or oftener, on which occasions farmers in need of silos are organized into a party to visit and inspect the best silos of various materials, in the surrounding country. The wide-awake contractor usually can find many opportunities to attract the attention of the most progressive farmers by allying himself with every movement for farm improvement within his range of activity.

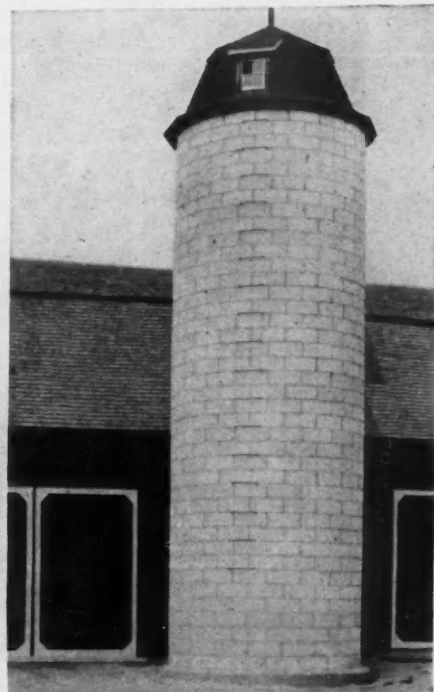


**Saving Bank Deposits for Home Building**

FOUR PER CENT of the combined savings deposits of Richmond, Va., banks, set aside as first mortgage loans to finance building, was the plan recently placed before the Chamber of Commerce of that city. Under this plan adequate funds could be supplied for the construction of about 500 new homes. Business men have suggested supplying funds for such a pool.



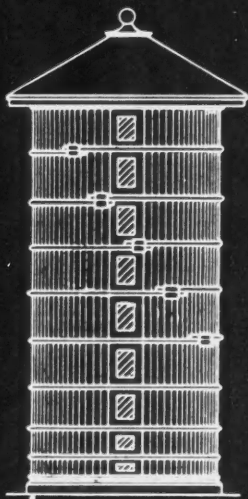
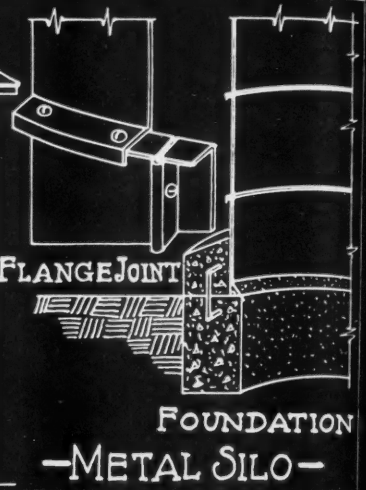
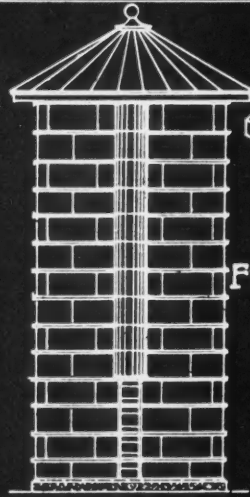
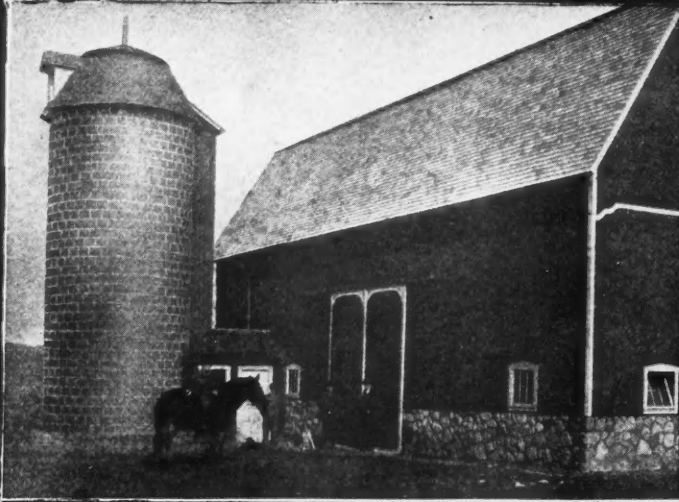
Concrete Silos Are Being Used More and More for the Storage of Rock Phosphate, Widely Used as a Fertilizer. These Tanks Were Erected by a Silo Contractor for the Bonfield Limestone and Phosphate Company, Bonfield, Ill.



"Enamel Block" Silo, Made of Smoothly Surfaced White Faced Concrete Block.



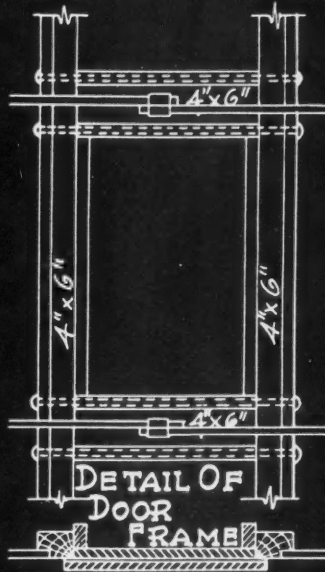
# RECOMMENDED CONSTRUCTION



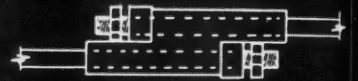
ELEVATION



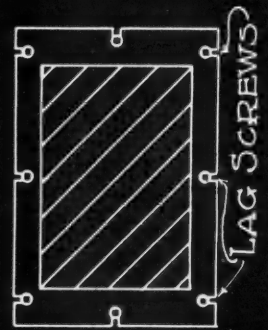
CROSS SECTION



DETAIL OF DOOR FRAME

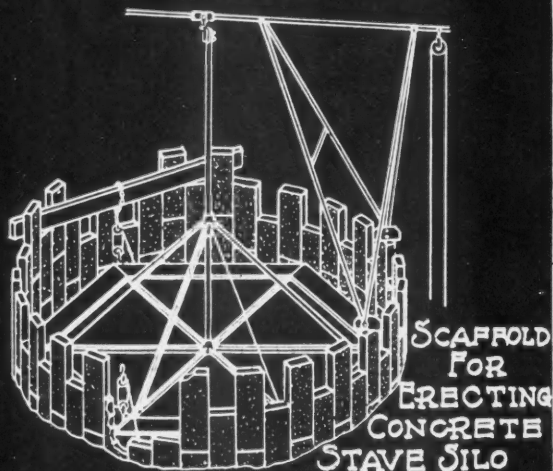


HOOP YOKE



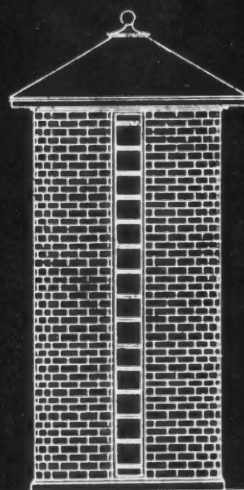
DOOR

-WOOD STAVE SILO-

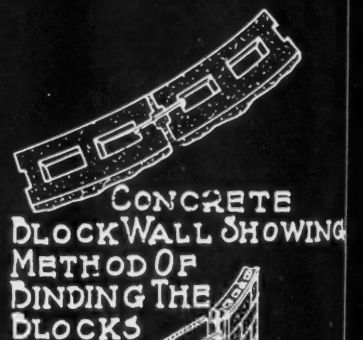


SCAFFOLD FOR ERECTING CONCRETE STAVE SILO

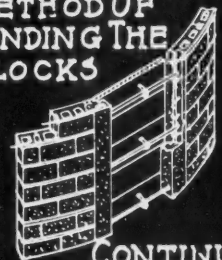
-CONCRETE STAVE SILO-



ELEVATION



CONCRETE BLOCK WALL SHOWING METHOD OF DARNING THE BLOCKS



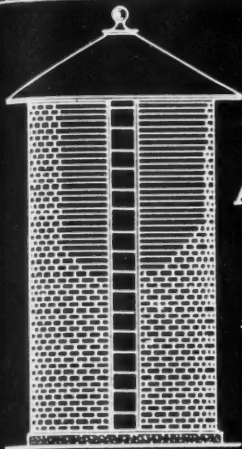
CONTINUOUS DOOR OPENING

-CONCRETE BLOCK SILO-

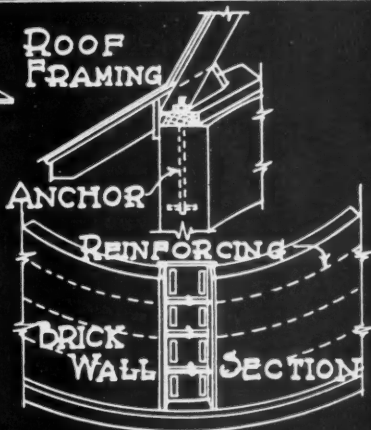
# DETAILS OF SILO CONSTRUCTION



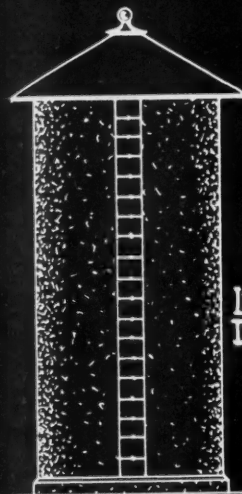
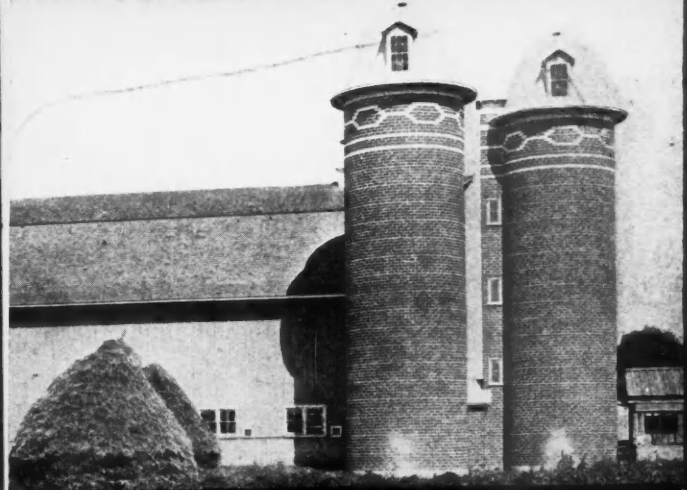
# RECOMMENDED CONSTRUCTION



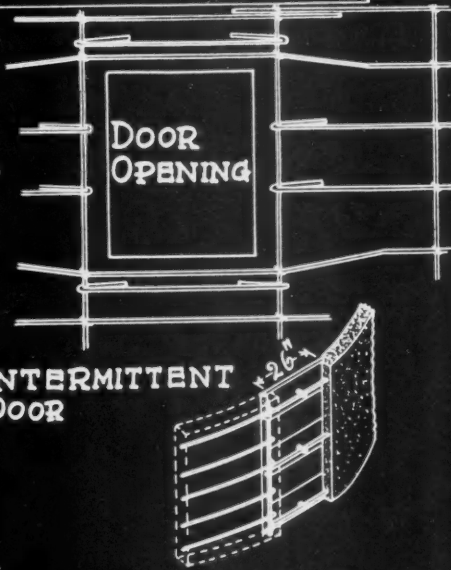
ELEVATION



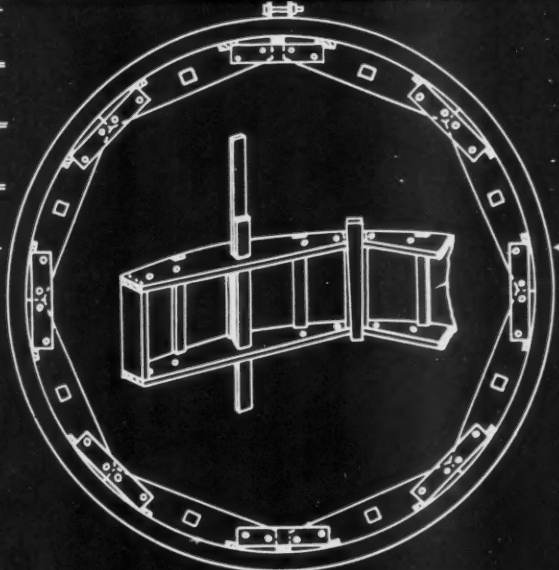
-BRICK SILO-



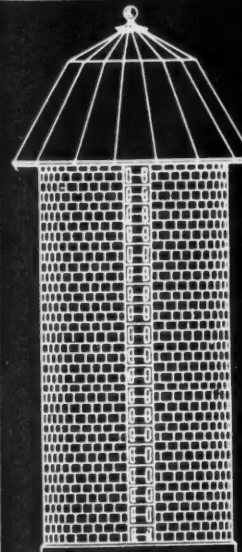
ELEVATION



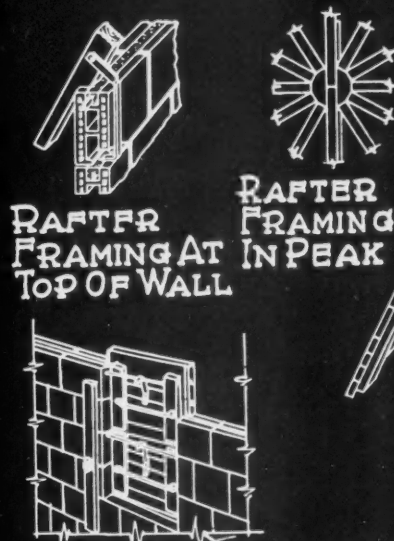
-MONOLITHIC CONCRETE SILO-



CONCRETE FORM



ELEVATION



-HOLLOW CLAY TILE SILO-



# DETAILS OF SILO CONSTRUCTION

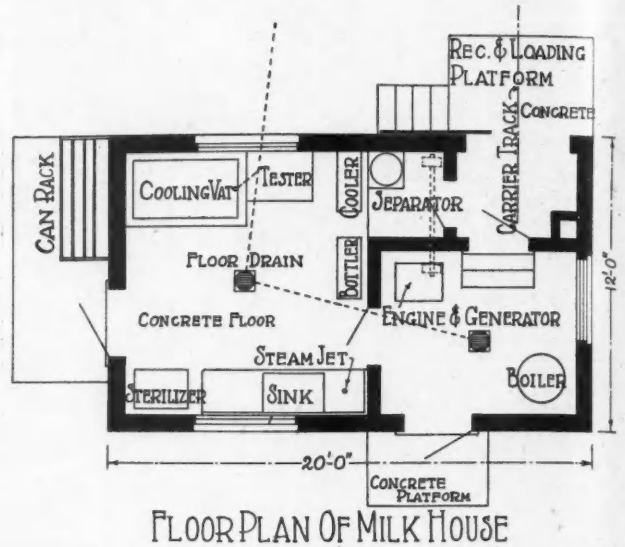
## A Space Economy Milk House

DESIGN FOR HOLLOW CLAY TILE FARM BUILDING

**T**HE farmer who separates and bottles his milk for trade in a town or city is interested in the individual milk house. The floor plan shown here gives an idea of how a small but efficient plant can be constructed. The building, which is only 12 by 20 feet, is built of hollow clay tile. The dead air space in the tile acts as an insulator against rapid temperature changes. The roof, gable type, can be made of slate, asphalt, or wood shingles.

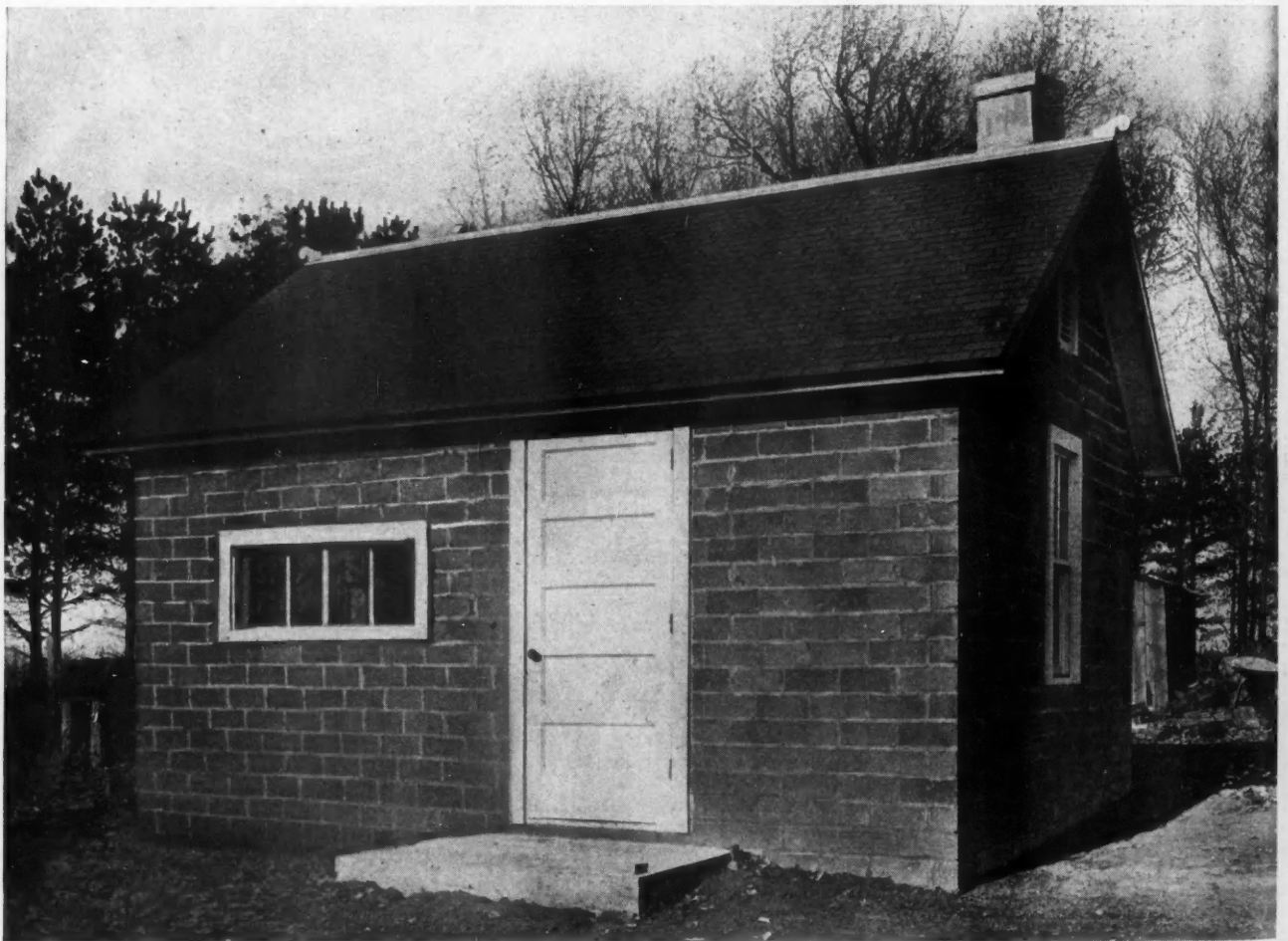
The whole plant is designed with a view to economy of space and effort. The raw milk is received on the loading platform made of concrete at the side of the house. From the receiving room it passes directly to the separator and from there to the other equipment in their turn. They are arranged in the large room with this purpose in mind. By placing them near the walls free floor space is provided and drainage, which is an important part of the process, is made easy. A trap in the center of the room takes care of all the refuse liquids. The boiler room containing the generator, engine and boiler completes the plant, a unit in itself.

A small building of this type can be built adjacent to the dairy barn and thus eliminate long hauls and



Floor Plan, Showing Layout and Location of Equipment of Milk House.

excessive handling. In this way it will not only reduce the labor required, but will also result in a considerable saving of time. The quick marketing of milk is one of the important duties of a dairyman because of the perishable nature of the product he handles.



Space Economy Milk House of Smooth-Faced Hollow Tile Construction. The Floor Plan Above Shows the Efficiency of this Structure Which is 12 by 20 Feet.



# 1921 Models in Barn Buildings

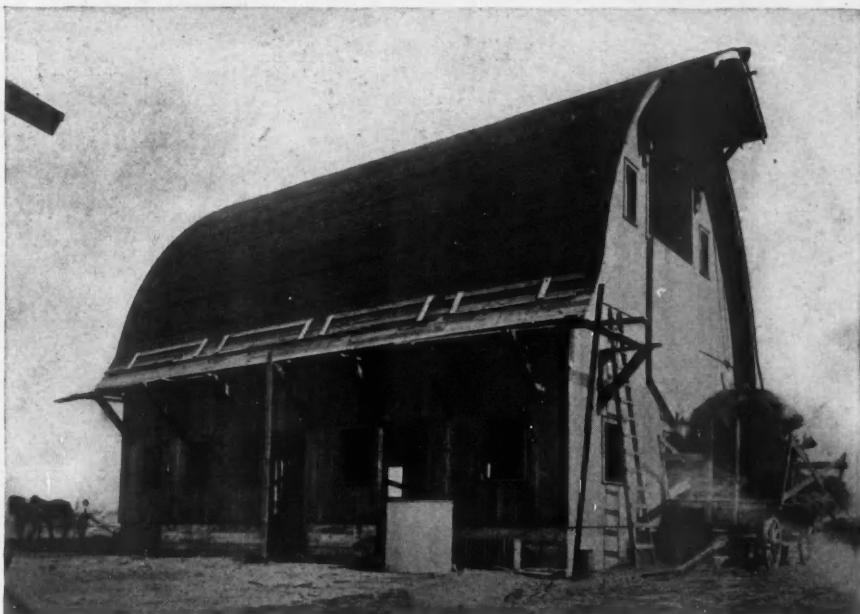
VARIETY OF APPROVED TYPES OF BARN ROOFS SHOWN IN DETAIL ON BLUEPRINT PAGE 104.

**C**ONSIDERED from a variety standpoint, women's clothes are as unique and variegated as anything known to man. But this quality is by no means monopolized by the female of the species. A rival is found in a field in which very few would suspect, let alone consider—dairy barn construction. It is a far cry from the evening creations of Paquin to the designs of barns for cows or horses, but the same underlying desire for something different is found in both cases.

Barn construction has assumed many styles and types as the blueprint layout on page 104 will show. To the builder no fashion book ever offered such a variety of interesting patterns. There is the monitor roof type, popular in some sections of the country, affording excellent ventilating and lighting facilities because of its large window space; the familiar gambrel roof type which is built in a variety of styles

such as the trussed rafter, heavy timber, plank frame, or double heavy timber. Perhaps the gambrel is the most universally used. It provides a large hay mow free from posts and other obstruction. The gothic, modeled after the historic lines of Gothic architecture, and gable roof types are also extensively used and have many points in their favor.

There is no lack of possibilities afforded the rural builder in this assortment. He has a type for every clime, condition, and emergency. His main duty is to build whatever type he may decide upon, substantially



Many Farmers Like the Gothic Type of Roof. Here the Roof Has Been Laid and the Barn Is Ready for the Finishing Touches. Barn Buildings Offer a Wonderful Variety of Types.

and correct. If fashions in women's clothes are not worked out correctly the results are far from pleasing. Plans are like patterns—they are but a means to a satisfactory achievement.

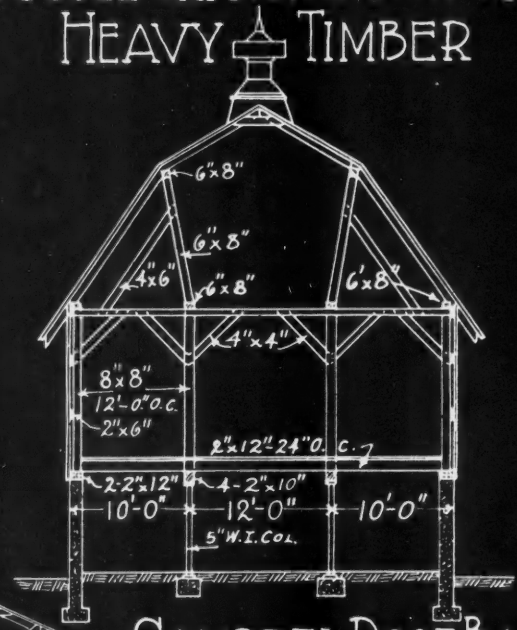
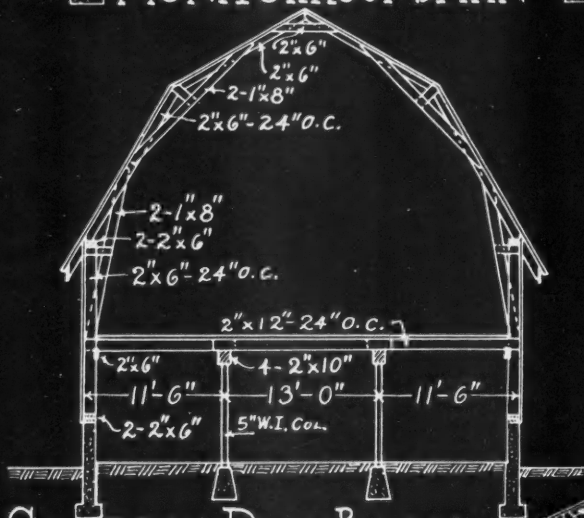
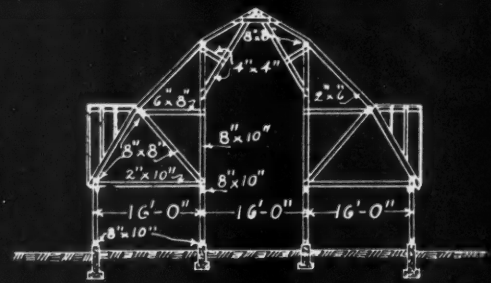
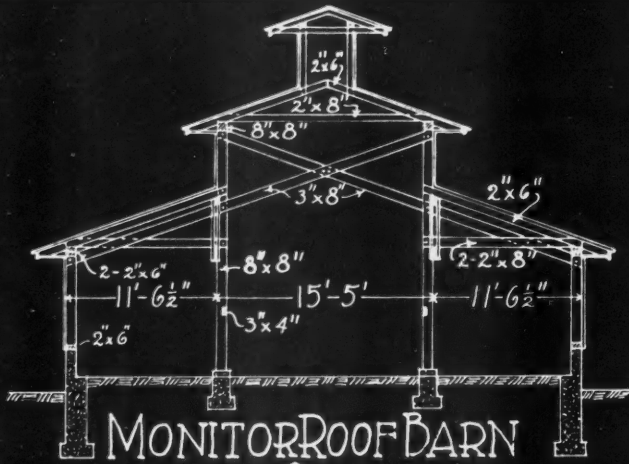
Select the roof plan that lets you use native timbers or planks of dimensions carried regularly in stock.



Familiar Gambrel Roof Barn. The Gambrel Roof Is Used Extensively in All Parts of the Country and Has Many Advantages, the Most Important Being Its Strength. Details of Gambrel Roof Are Shown on the Next Page in Blueprinted Form.

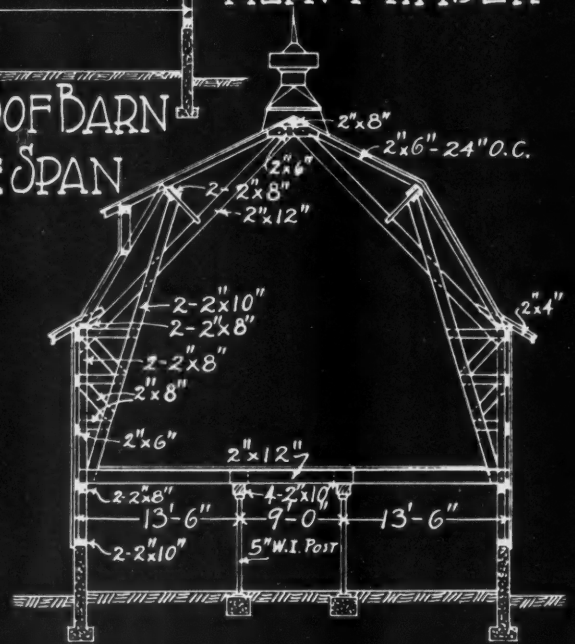
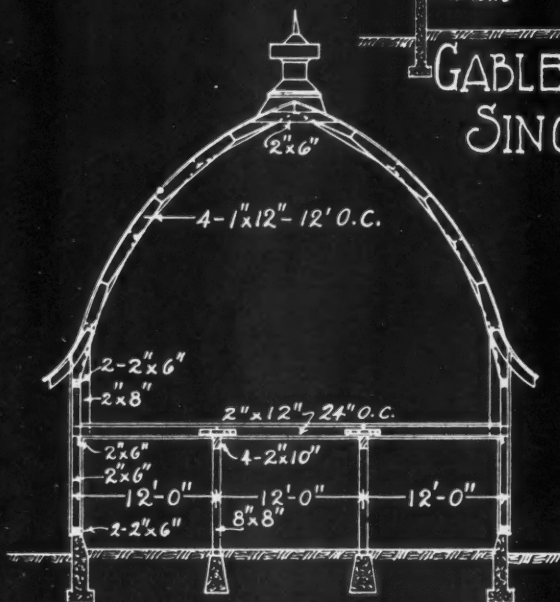
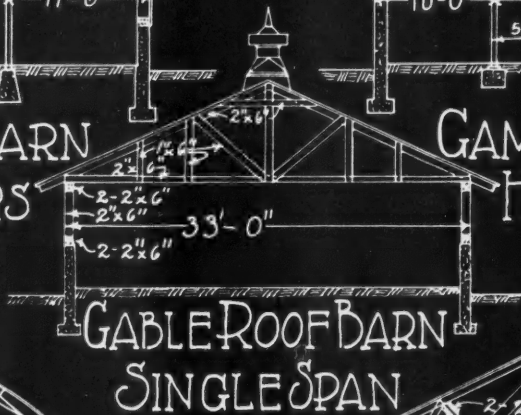


# RECOMMENDED CONSTRUCTION



GAMBREL ROOF BARN  
TRUSSED RAFTERS

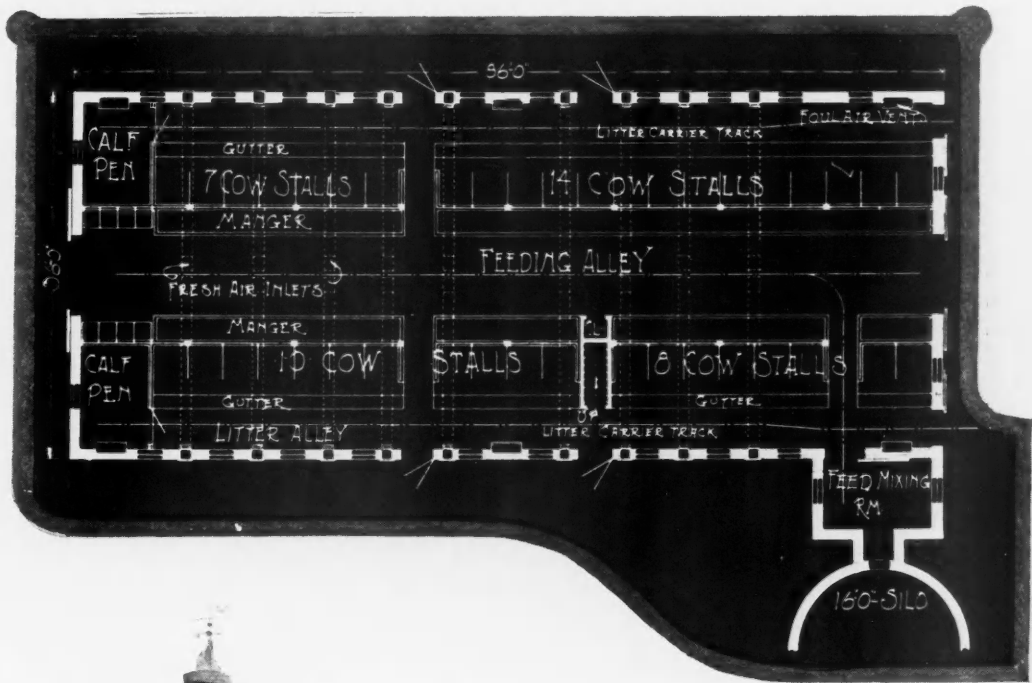
GAMBREL ROOF BARN  
HEAVY TIMBER



GOTHIC ROOF BARN

GAMBREL ROOF PLANK FRAME BARN

## BARN ROOF SECTIONS



**EXCELLENT TYPE OF GAMBREL ROOF BARN OF ENGLISH HALF TIMBER DESIGN.** The walls are hollow tile, stuccoed on the exterior with timber effect above the first floor. Immediately adjacent are two large glazed hollow tile silos 16 feet in diameter connected with the feed mixing room. From this room, carrier track leads to all of the stalls which are arranged facing in on a large feed alley. There are 39 stalls of modern design with steel stanchions, drinking cups, and sanitary mangers. Carrier tracks running along the litter alleys take care of the litter carriers to the manure pit. Fresh air inlets and foul air vents have been installed to provide proper ventilation as well as roof ventilators. The large hay mow is well lighted by roof windows on each side. Size, 36 by 96 feet.

# Colonial Farm Home Proves Attractive

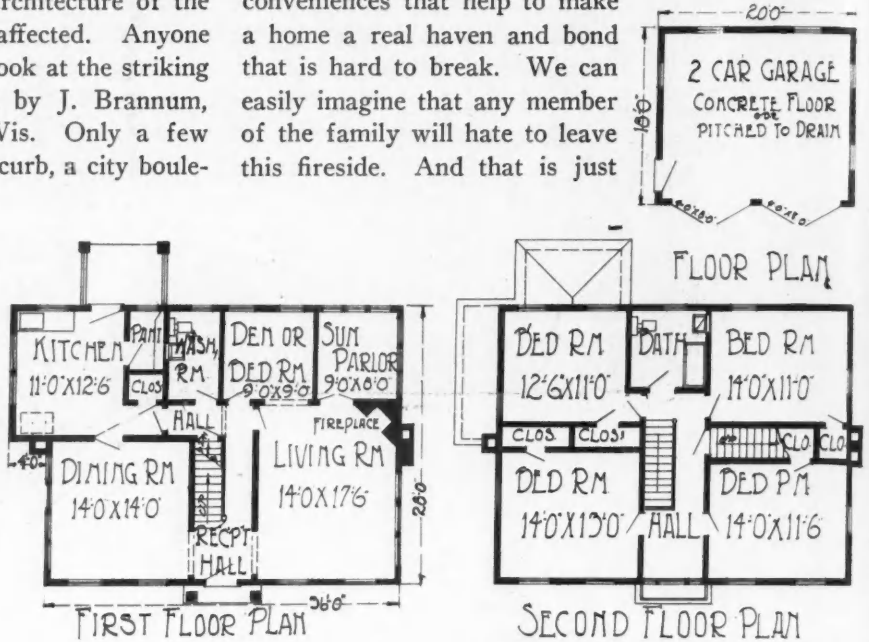
HOSPITALITY, CHARM, AND COMFORT EMBODIED IN BEAUTIFUL FARM HOME GROUP WHICH EXEMPLIFIES MODERN TENDENCY IN RURAL CONSTRUCTION

WELL-PAVED highways and automobiles have brought the farmer very close to the city—in fact, so close that the architecture of the farm home has been profoundly affected. Anyone doubting this condition only has to look at the striking colonial home shown here, owned by J. Brannum, progressive farmer near Racine, Wis. Only a few feet away is the concrete road with curb, a city boulevard, leading to large cities in either direction.

This happy picture could very easily represent a beautiful section in an attractive suburb—in fact many readers would doubt their eyes if they saw this building and garage on a farm. Yet it is an actual fact, and only one more link in the chain of overwhelming evidence that the farmer is building his home just as attractive, just as convenient, and just as modern as his city neighbor.

Set into very harmonious surroundings with all the natural beauties of nature to enhance its already appealing appearance is this eight-room Colonial house, 36 feet wide

and 28 feet long. By no means large, it is ample for the needs of a good-sized family and fitted with all the conveniences that help to make a home a real haven and bond that is hard to break. We can easily imagine that any member of the family will hate to leave this fireside. And that is just



Floor Plan of First and Second Floors of Colonial Farm Home and Two-Car Garage in Rear.

what every farmer is striving to do, or should be trying to bring about.



Farm Home of J. Brannum, Racine, Wis. This Picture Shows How Well the Colonial Type of Home Fits Into Farm Surroundings. Set Close to the Well-Paved Road it Has the Appearance of a Fashionable City Home on a Boulevard. This Charming Home Contains Eight Rooms.





Fine Farm Garage with Two-Car Capacity and Double Hinged Doors. It Is Built to Harmonize with Colonial House. Note Side Windows and Shutters.

On the first floor is the typical colonial living room, large, roomy, comfortable and restful, with open fireplace, a small sun parlor, dining room 14 feet square, and cozy efficient kitchen, easily large enough to take care of the family. The fifth wheel of the farmhouse, the washroom, and the den or bedroom, as it may be used, make up the rest of the first floor.

Up above there are four large, cheerful, well-lighted bedrooms, unusually large closets, modern bathroom with running water and built-in fixtures. No one can appreciate the benefits and luxury of running water more than the man on the farm. That is why so many private water-supply systems have been installed in farm homes by builders at the explicit request of the farmer. This home being on the main highway has easy access to trunk lines for the electricity for light and power. However, had it not been so fortunately located, the occupants would not be denied these conveniences, because lighting plants are available.

A short distance to one side of the house is the garage, capable of housing two cars, built in keeping with the general appeal of the scheme. It is 18 by 20 feet and has a double pair of large outswinging doors. The floor is concrete, pitched

to a drain in the center. The driveway leads directly out to the main road. ❖

#### Wood That Does Not Rot

THE wood of the mangrove tree which is found in French Guiana, is considered by the French as a wood that will not rot. All exposure and efforts to break down its fiber in four years' experiments by the French railway service has been useless.

The grain of the wood is so close as to practically exclude all moisture. Its density is placed at 110, as against 40 for fir and 70 for oak. In addition to this closeness of fiber the mangrove has a large amount of tannin in its make up.



Colonial Door Detail. This Excellent Entrance Typifies the Progressive Tendency in Farm Home Construction. A Most Attractive and Inviting Approach to a Comfortable and Modern Home.



# Woman and the Home

## The Life Side of the Farm Home

SOME STARTLING FIGURES ON THE AMOUNT OF LABOR-SAVING EQUIPMENT NEEDED IN THE AMERICAN FARM HOME

By Grace T. Hadley

Society for Electrical Development.

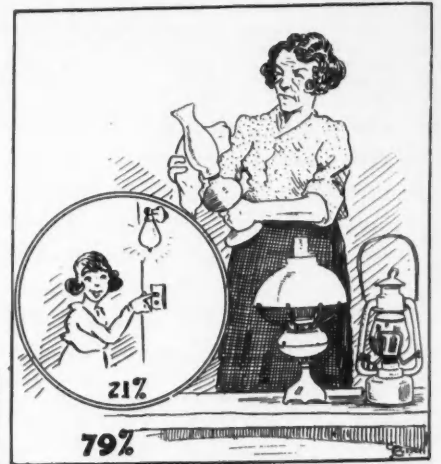
**T**HE prime necessities of the farm home are first a good water supply, a complete sewage disposal plant and most important, a power and light plant or electric service in the home. Statistics compiled by Florence E. Ward, of the States Relation Service, show that only 22 per cent of the farm women of America have mechanical power in their homes which means that 78 per cent are still enslaved in ceaseless drudgery of housework. This percentage of farm women still wash the old way while 79 per cent still clean and fill kerosene lamps and 68 lug water from well or pump in pails.

Mr. A. C. True, director of States Relation Service Department, reports that 35 per cent of the farms have power but only 8 per cent have power in the farm home.

### Some of the Duties of the Farm Woman

The average farm woman works a few minutes more than 13 hours out of the 24 in summer and her daily average for the year is 11 hours and 18 minutes. Half of the farm women are at work at 5 A. M. The role played by the average farm woman is that of ceaseless

where lamps are used, cleaning the burners and trimming the wicks is a disagreeable job that takes an hour of work a day. Electricity offers a much better light and an immediate reduction in the fire insurance. Next to electric light and its safety value is the water supply system furnishing great comfort. In the farm-



Seventy-nine Per Cent Still Clean and Fill Kerosene Lamps and Lanterns. Twenty-one Per Cent Have Learned to Appreciate the Magic of the Electric Button and the Convenience of Real Light.



Seventy-eight Per Cent of the Farm Wives Still Pay the Toll of Drudgery Because of Lack of Mechanical Power. Twenty-two Per Cent Have Seen the Light and Are Enjoying the Benefits of Mechanical Assistance.

drudgery from sunup until after sundown. Here are some of the duties of the farm woman who has no electric light or power in her home:

On a farm

house a good water supply is an absolute necessity, saving time in the kitchen and the milkhouse and it puts an end to pumping. The farm woman walks about 353 miles a year to and from the well or pump lugging water used in the kitchen. The amount of water used in a house equipped with modern plumbing is about 150 gallons a day. This allows from 25 to 30

gallons each for five to six people.

A clean dairy must have running water and milk cooling depends on water. A farm water system to be dependable must be automatic and such a system is run by a small motor. On the farm where there are cows to be milked it is a struggle to get them milked. The men cannot always be spared from the other work to milk, so of every 100 women on farms, 36 of them help with the milking while 79 per cent of them trim and fill kerosene lamps and all but four do the family washing. The women feed the poultry on the



It is Estimated 68 Per Cent of the Farm Women Still Lug Water From Wells or Pumps in Pails. Thirty-two Per Cent Are Enjoying the Benefits of Water Supply Systems.





As a Bullder With Influence In Your Community Are You Allowing Such Work As Shown In this Picture to Be Carried On? This Age of Progress Demands Comforts and Conveniences for the Farm Home.

farm and usually the corn is shelled each day as they feed it. This is a mean job but with a motor to drive the sheller a week's supply of corn can be shelled in less time than a day's supply shelled in any other way. In short, the work of women on the farm is a never-ending round of chores that take time and labor.

**Pathetic Picture That Is Fading**

Tired out after the long hours of drudgery she drops wearily into a chair. The light from the smoky kerosene lamp shows her face to be wan and worn, the face of a woman grown old before her time. A tear rolls down her cheek and falls on the toil-roughened hand. She is left on the now lonely farm with only wistful thoughts as companions. The children are grown and gone to the city. She could not sal-



Contrast this Happy Scene to the One Opposite. She Wears a Smile that Speaks Volumes as to the Efficiency of Running Water. This Should Be a Common Sight, Not the Unusual. The Bullder of the Country Has a Great Mission to Perform.

vage enough time from her innumerable tasks to create a real home-like atmosphere for them and as has been pointed out in some recent farm-life studies, "the life of the home may be so simple as to be too simple." There is a plethora of hard work and not enough amusement to keep the children there.

"If only I had had more time for rest and recreation," she sighs, "how different it might have been." Hers is the pathetic story of years of youth lost in ceaseless drudgery. Her eyes close, her tired head droops and she dreams of the woman she might have been if —

**Enter the Genie —Electricity**

"Behold the farm equipped with electricity and the much-dreaded drudgery reduced to a minimum," says the Genie, bowing low. "First consider the light; a snap of the switch turns on the light. There's no



We Like Happy Pictures Because We Are Just Like Everybody Else. We Want Every Farm Wife to Enjoy the Benefits of Mechanical Power and Convenience. It Is Up to the Man Who Builds to Carry This Idea Out.

lamp to fill, no wicks to trim, no smoky chimneys to clean, an hour a day saved right there, and the light you get from electricity! Well, it can't be beat. It's pure white and steady.

"Washing was mighty hard work when done with the old tub and scrub-board, but with this new electric washer—what a difference. You run hot water into the machine, put in some soap powder, start the machine and make the whitest suds, then you put the white clothes into the smooth cylinder which is full of holes like a sieve to permit the sudsy water to go thru and thru the clothes; when the lid is down the electric switch is snapped and the motor rocks the cylinder round and round in the suds and all the dirt is washed out of the clothes without the rubbing that was necessary when done the old way.

"Then on ironing day there was the hot stove and the old sadiron to be lugged back and forth. With this new electric iron steps are saved, time is saved and strength that was wasted walking to and fro lugging the old 6-pound sadiron.

"With this new portable electric sewing machine sewing becomes regular indoor sport. No more tiresome pedaling for this little electric motor eases up the



It Would Be An Ideal World If Clothes Always Remained Clean and Spotless. But They Don't, and Folks Must Make the Best of It. This Housewife Is Not Perturbed by the Approach of Wash-day.

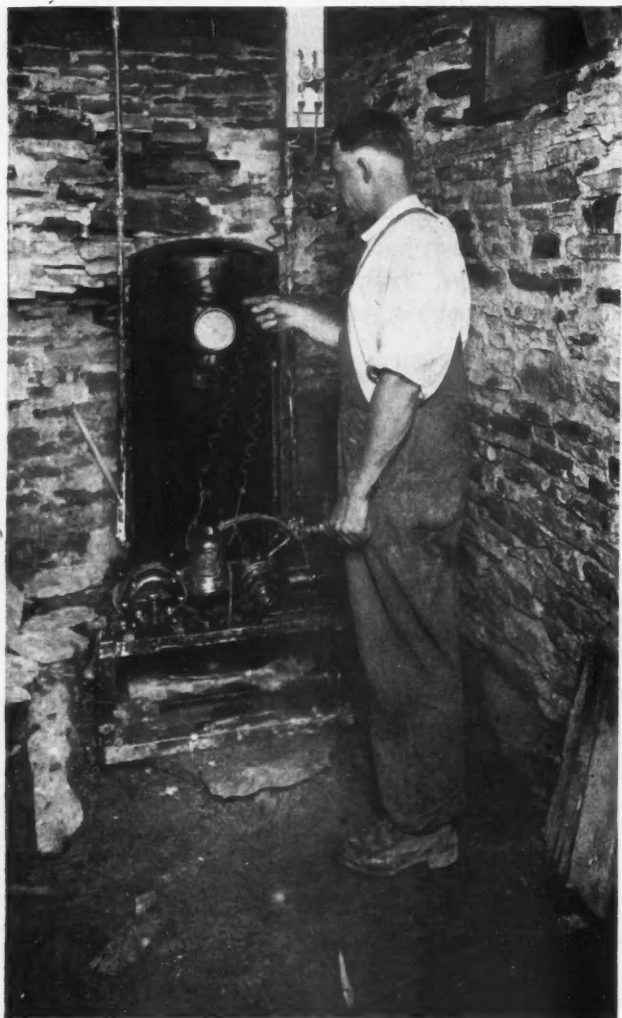
task immensely. The motor does the hard work. It runs and runs and never gets so tired that it is 'all wore out.'

"Now just step out on the back porch and take a look at the new electric butter-maker which churns the butter in from 10 to 15 minutes without any hand labor and all done at a power cost of not more than half a cent. The electric butter-maker churns from 1½ to 3½ gallons at a time. The container is a double glazed jar with side handles and it is easily cleaned.

"Here is the new poultry house equipped with electric lights. It is now a recognized fact that poultry production can be stimulated during fall and winter months by the use of such lights in the poultry house, so that with proper feeding the output of the flock very nearly equals the spring and summer production. Oh, there is no end to the uses of electricity on the farm. With it you can clean quickly with an electric cleaner, wash dishes, cook, churn, separate milk, cut the fodder, pump water, ventilate and cool the house in summer and do many useful things with the modern appliances that make the life side of the farm home easier and happier—why, here is father looking young and pleased, let's hear what he has to say." And he fades from view.

#### Father With a Pleasant Smile Enters

"You know, mother, my corn was very dry, making it necessary to add water in order to keep it in good condition. Here is where my electric water system stood me in good stead; the little pump drew water from the bottom of a 40-foot well and distributed it at



It Does Not Look Like Aladdin's Wonderful Lamp. But It Has Worked Almost As Magical Results. Running Water In Kitchens, Sanitary Bathrooms Are Some of the Results Wrought by This Little Machine.



## Making the Farm Home Attractive

BUMPER CROP OF HAPPINESS FOUND IN COMFORTABLE HOME WITH MODERN CONVENIENCES

By D. Q. Grabill

**T**HE farm home is the bulwark of our nation. It is both our first and last line of defense. It is here that those ideals of thrift, of industry, of co-operation, of patriotism, are learned and lived by the boys and the girls who are to constitute that great body of American citizens upon whom will depend tomorrow the safety of our republic.

How important, then, it is that the farm home receive more consideration in the future than it has in the past. As one drives thru most any rural community in America today, it is evident that in about 90 per cent of the farms seen the home is considered of secondary importance.

A few years ago we thought of the barn as simply a shelter to protect the cattle from the wind and storm. Today the farmers are building barns that are really modern manufacturing plants.

But in many instances the farmer still looks upon the home, or rather upon the house, as simply a shelter and a protection from the weather. Those conveniences which he has enjoyed in the tilling of the soil, the harvesting of the crop and the care of the herd, are not found to any equal degree in many of the rural homes of America.

It is not because the American farmers have failed to appreciate the work of their wives and children, but perhaps the farmer has not been able to do all things at once, and his mind has been so taken up with the cultivation of the soil, the raising of the crops, the feeding of the cattle, that he has had but little time to think of household conveniences.

After all, the most important thing on the farm is not a bumper crop of corn, of wheat, of beef, or of milk, but a bumper crop of happiness, but this will not be found except as it finds a place in the home. The home surroundings can be made really attractive with mighty little expense. The

house should be located on sufficiently high ground so that there is a natural slope, providing drainage. The bare portions of the house can be made more attractive with thick growing vines, and the woody twiners, shrubs and flowers can be used to fill the angles in the foundation and to help make a natural picture of beauty. Trees should be placed for shade, for wind-break, or for a background, leaving a smooth open lawn in front of the house. Plants and shrubs can also be used to shut off from the house the view of more unsightly buildings and unattractive corners, thus making the outlook of the house, as well as the appearance to passersby on the road, more attractive.

But the interior of the house is of even greater importance than the exterior. The great majority of our farm houses have been built without any plans, no consideration has been given to the saving of steps of the farm wife and mother, whose work is never done.

If we were to say "The average farm woman throws away \$500 a year," or "She wastes a pound of butter or a pound of sugar a week," we should begin at once to search for the reason and stop the loss. Yet her waste of vital energy, due to lack of proper arrangement of her kitchen alone, is far more extravagant and much more serious to her and to her family.

The average woman wastes a tremendous amount of energy in useless walking. Her kitchen furnishings are so placed that she must cross and recross the kitchen floor, from one place to another. If the stove and table, the sink, the kitchen cabinet, the dish cupboard, the

ice box, and all the kitchen furniture were properly arranged, there would be great saving both of time and energy, and perhaps, who knows, of temper as well. It is important to arrange the barn for convenience of operation. Is it not of even greater importance to arrange the kitchen for the convenience of the one who spends a large portion of her life doing the most important work on the



Attractive Farm Homes Keep the Young Folks Happy and Contented. The Farm Home Is More than a Shelter, It Is "a Place of Friendship and Love, Where Life Is Lived to Its Fullest, Priceless Memory In the Soul of the Boy and Girl."

farm—rearing the family?

If you use a wood or a coal stove, why not have a box built to contain the fuel, put it on casters so it may be filled near the door, then wheeled up near the stove.

In most of our city homes there is both hot and cold running water. These things are just as possible in the farm house. There is no reason why an up-to-date farm home should not be provided with this convenience, as a water system may be installed without great expense. If nothing better can be done, a large barrel can be placed outside the kitchen wall and fitted with pipe and a faucet and will furnish running water for a large portion of the year.

There are a number of first-class electric motors upon the market which can be used to pump water into a pressure tank which will supply both the house and the barn. These are coming into greater and greater use.

Or one of the many small gasoline engines now being manufactured can be hitched directly to the pump and accomplish the same purpose.

This gas engine can also be used to run the churn, the washing machine, and the separator, either directly, or used to generate electric power. The latter is preferable, as then the farm wife may have an electric vacuum cleaner to save many of the backaches of sweeping day. She may have her house lighted with

electricity, to save the work of cleaning dirty, smelly, kerosene lamps. She may have an electric iron to remove the drudgery of ironing day, making washing and ironing a pleasure.

The housewife has to spend many hours a day in the kitchen, and everything possible should be done to conserve her health, as well as to enable her to perform her work most efficiently. The matters of light and ventilation are just as important to her in the kitchen and the home as they are to the cows in the barn. A window reaching to the ceiling is especially good, as it lets out the hot air as it rises. It is also impossible to have too many windows in any kitchen. A small window above the sink, or a small window above the cupboard adds to both lighting and ventilation.

During cold weather, ventilation may be secured by placing a board as long as the width of the window, shutting the lower sash upon it. This arrangement will admit air between the two sashes without draft.

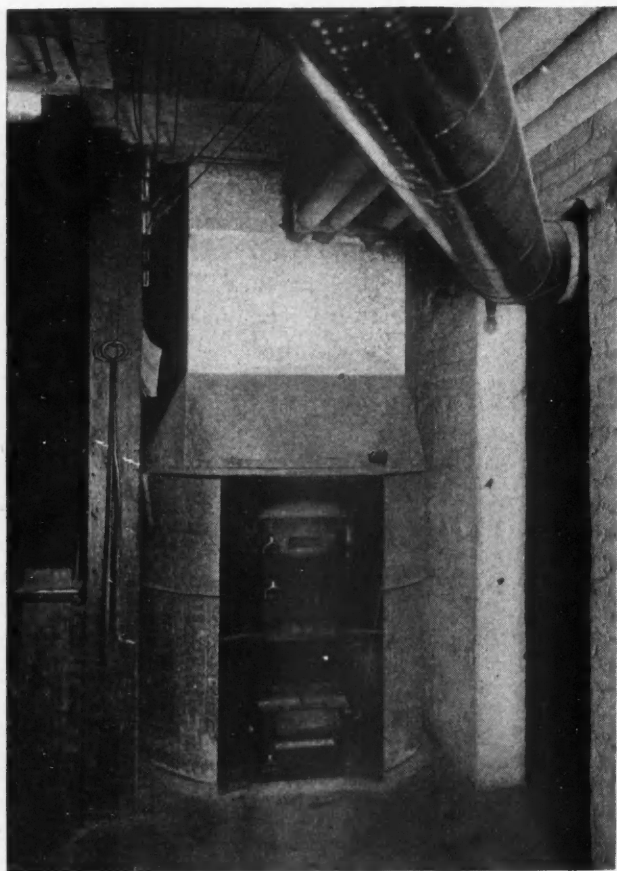
The kitchen should be furnished with a high stool which will encourage the habit of sitting down to iron clothes, to peel vegetables, to mix cakes, and similar occupations.

After all we have heard about disease germs being carried by flies, still a lot of American farm homes in summer time are unprotected by screens for doors, windows and porches. These screens should be provided, and they should fit tightly, and they should always be in place. If screens cannot be afforded, a piece of ordinary cotton mosquito netting only costs about 50c for 16 square yards. This can be tacked on the frame, and will efficiently exclude the flies from the house.

With the proper conveniences, it is easier to keep the farm home in good condition, both interior and exterior, clean, orderly, comfortable and hospitable. Let it be as attractive in furnishing as means will permit. Let it be made a home which the family will be reluctant to leave, and to which neighbors and wayfarers will be eager to come.

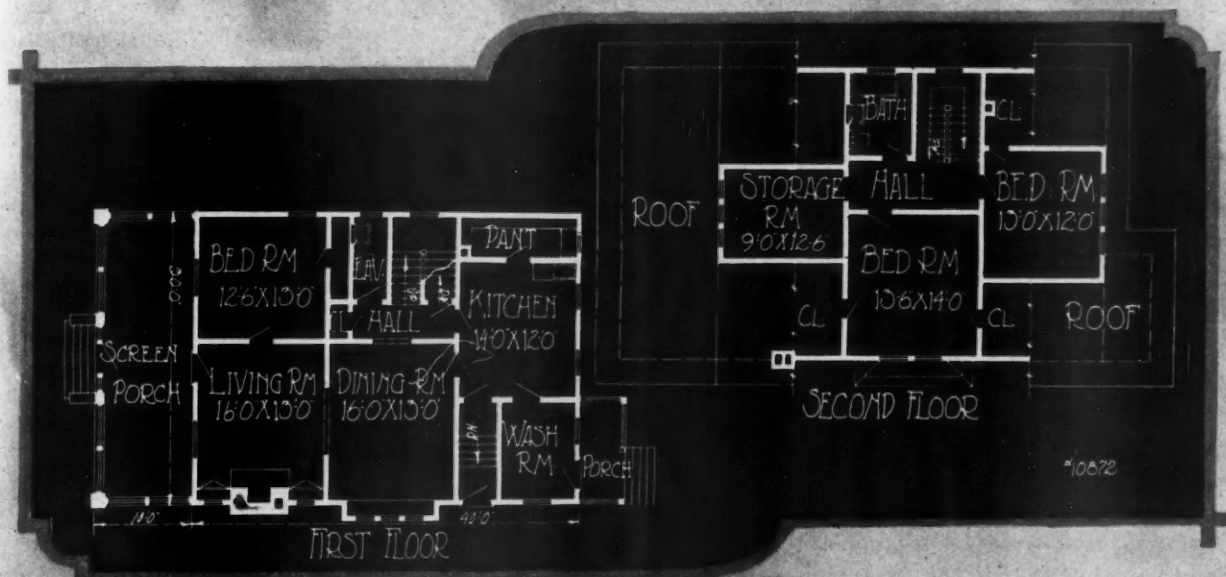
It was Irving Bacheller who said, in a story, "When you enter a home you begin to feel the heart of the owner. Something in the walls and furnishings, something in the air, that bids you welcome, or warns you to depart. It is the true voice of the Master."

Let us think of our farm homes as more than four walls to protect from the weather, a place where the men go to eat when hungry and to sleep when tired. It is time to think of it as a place of friendship, of love, where life is lived to its fullest, a place so attractive that it will exist forever as a priceless memory in the soul of the boy and the girl, even tho they may wander to the end of the earth. If it is this kind of a home, the boy and girl may not wander away. They may come to so love it as to remain until the time comes to build similar homes of their own.



Type of Pipeless Furnace Which Is Used Extensively In Farm Homes. The Addition of a Heating Plant Has Added Untold Comfort to Many Homes Where Before, a Cook Stove Ineffectively Fought to Keep Away the Depressing Chill of Winter.





**COZY STORY-AND-A-HALF HOUSE OF ATTRACTIVE DESIGN.** This charming little frame structure with its broad front porch and concrete foundation stuccoed above the building line is bound to appeal to many people with family. The low gable roof gives the house an appearance of rambling comfort altho the building is not large, being 30 by 40 feet. The porch is screened in and covered by an extension of the main roof. On the first floor are four rooms: Living room, 16 by 13 feet, with open fireplace and wall bookcases; dining room with bay window; kitchen, 12 by 14 feet; one bedroom, and a washroom which can be used very conveniently on laundry day. This house would also suit very advantageously the needs of a farm home. Upstairs there are two bedrooms, bath, and a storage room.

## Better Boarding Houses Are Needed for Farm Workers

THE SOLUTION OF THE HOUSING PROBLEM FOR HELP ON LARGE DAIRY AND GRAIN FARMS IS FULLY AS IMPORTANT AS THE PROVIDING OF LIVING ACCOMMODATIONS FOR WORKERS IN THE CITIES

By A. J. R. Curtis

**T**HERE is a trend toward better living conditions on American farms. It has not gone far as yet, however, and the general level of farm housing—as represented by the quality and style of the dwelling and completeness of its conveniences—is still a long way below that prevailing in average communities.

In proportion as the general level of dwelling houses on the farm is below that of dwellings in urban districts, so the farm boarding house, as it usually exists, ranks below accommodations for corresponding classes of workers in the city. While the solution of the general farm housing problem is a difficult one, on which depends very largely the chance of keeping the farm youth on the farm, the problem of providing at least humane and comfortable quarters for the farm help is still harder of solution and, if anything, more pressing. With present scarcity of farm labor, the problem involves not only comfortable quarters, but a place to live that is convenient and attractive, and to some extent dignifies the occupant rather than stamps him with the mark of a servile occupation.

The problem of the boarding house is most urgent in highly developed types of farming like dairying and stock raising, where the greater share of the work the year 'round is routine, requiring steady help. In these

days of scarce labor the boarding house constitutes one of the most important units of the production equipment on farms requiring more than one or two hired men, for its attractiveness or lack of attractiveness will often do more than wages to keep good men on the place or to drive them from it. Under present



View Showing Right and Rear Wings of the Farm Boarding House at Mooseheart Farm.

conditions the boarding house structure and its equipment requires more attention and a more liberal investment than has been given them.

In the design of the modern boarding house spare no effort to make it comfortable and homelike; provide clean, light and well ventilated sleeping quarters; install ample and convenient wash facilities; look well to the arrangement of the kitchen and to the kitchen equipment and make the dining room handy, cheery and inviting.

At Mooseheart Farm, operated by the Loyal Order of the Moose near Aurora, Ill., a dormitory of new and unique design known as the "airship" type was put into service last year. After several years spent in observing the requirements of dormitory structures for farm help, a group of specialists who recently visited this farm found this structure contained more of the recognized requirements for the farm boarding house than is usually found in any one plan. Since the building at Mooseheart is equipped to meet conditions not strictly comparable with those on the average large dairy farm, the plan to be described in the following paragraphs is not identical with the Mooseheart building in interior arrangement, altho general dimensions and outside appearance remain the same.



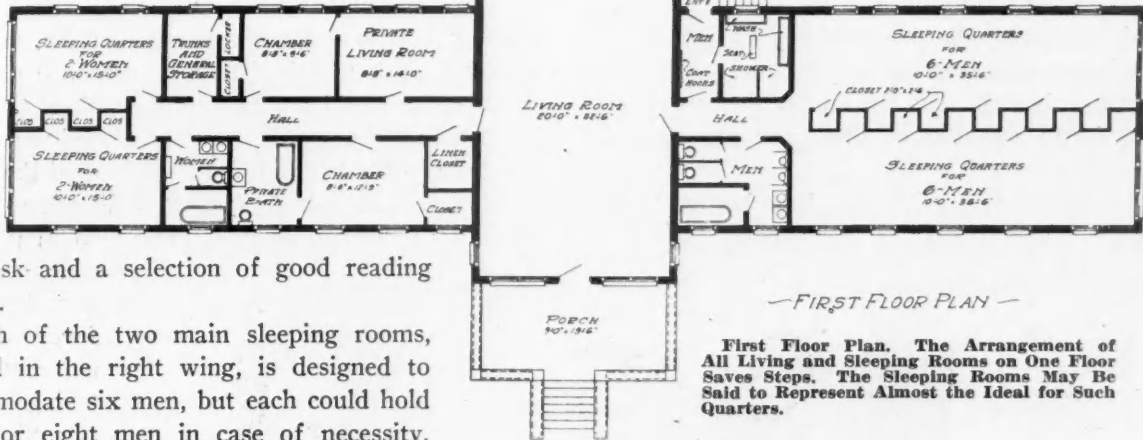
Side Elevation of the "Airship Type" Boarding House, Showing the Left Wing of the Building. The Abundance of Light and Air in the Sleeping Rooms, as Provided by the Many Windows, Is a Dominating Feature of the Plan.



This boarding house has a pleasing and dignified entrance and a large comfortable front porch rather than an apologetic back stoop. Referring to the first floor plan, there will be noticed a rear entry leading directly into a cloak hall and washroom with showers where the men may clean up quickly before passing to the other parts of the house. Regular or special boarders can pass from the washroom to the dining room by way of this entry. The living room is ample and should be provided with a writ-

The left wing of the building contains private living room, two chambers, bath and storage room for the farm foreman and his family, and quarters for four women at the extreme end. These quarters are similar but correspondingly smaller than those provided for the men. There is a big saving of steps by having all living and sleeping rooms on the same floor.

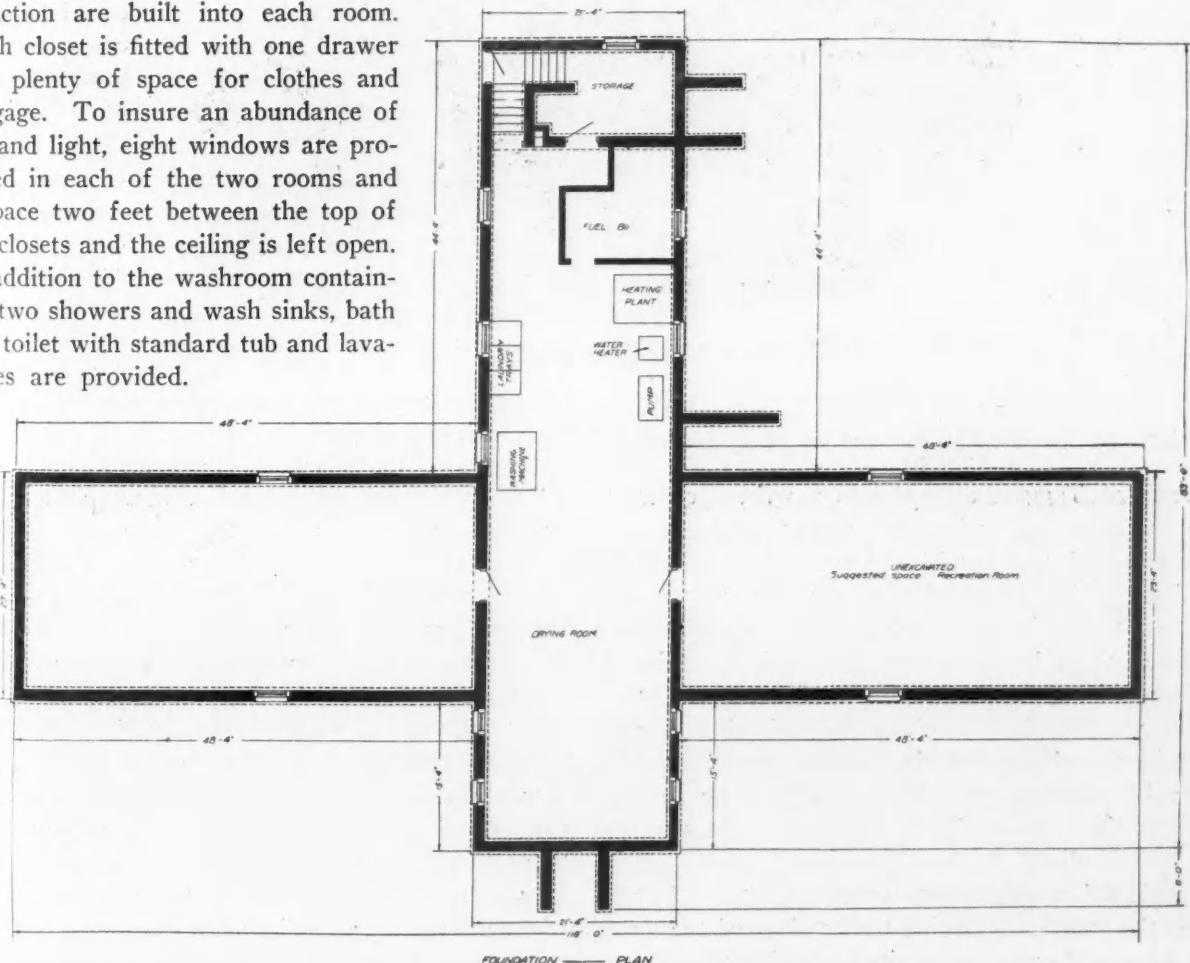
(Continued to page 121.)



ing desk and a selection of good reading matter.

Each of the two main sleeping rooms, located in the right wing, is designed to accommodate six men, but each could hold beds for eight men in case of necessity. Six individual closets of vermin-proof construction are built into each room. Each closet is fitted with one drawer and plenty of space for clothes and luggage. To insure an abundance of air and light, eight windows are provided in each of the two rooms and a space two feet between the top of the closets and the ceiling is left open. In addition to the washroom containing two showers and wash sinks, bath and toilet with standard tub and lavatories are provided.

First Floor Plan. The Arrangement of All Living and Sleeping Rooms on One Floor Saves Steps. The Sleeping Rooms May Be Said to Represent Almost the Ideal for Such Quarters.



Basement Plan, Providing Plenty of Space for Heating, Lighting, Pumps and Laundry Requirements, Fruit and Vegetable Storeroom and Possible Place for Large Recreation Room.

## Law for the Builder

RIGHT OF CONTRACTOR TO RECOVER FOR WORK DONE WITHOUT CERTIFICATE OF ARCHITECT, WHERE THE LATTER ARBITRARILY OR UNJUSTLY REFUSES TO DELIVER CERTIFICATE

By Leslie Childs

WHERE a contract stipulates that payment shall only be made, upon the certificate of the architect, it is usually incumbent upon the contractor to obtain such certificate before he can demand payment. In fact, this proposition in building law is so well established as to be termed the general rule followed by the great majority of courts.

However, like most general rules, it has its exceptions, and if the contractor can show completion of the work, according to the terms of the contract, and that the architect arbitrarily, or without reason, withholds the certificate an exception is presented. It follows that upon such a showing the contractor can recover, without the presentation of the certificate demanded by the contract.

But to make a case of this kind the burden is upon the contract, and unless the circumstances are of an unusual order, it is generally a difficult thing to do. Nevertheless the books contain cases of this kind which fairly illustrate circumstances under which the contractor may be excused from obtaining the architect's certificate. For example, *Arnold et al v. s. Bournique*, an Illinois case, reported in 33 N. E., 530, will serve.

### Contract Stipulated Payment on Architect's Certificate

Arnold & Taggert entered into a written contract with Bournique in which they agreed to do all the carpenter work and furnish the material upon certain buildings. The consideration for the work was \$11,254.30, and it was set out in the contract that payment should be made upon the certificates signed by the architects named in the contract.

The contract also contained the following clause: "And in case the parties shall fail to agree as to the true value of extra or deducted work or the amount of extra time, the decision of the architect shall be final and binding. \* \* \*"

Arnold & Taggert entered upon the work and completed the contract. During the conduct of the work they were paid upon the architect's certificates the sum of \$8,800. After the work had been completed, as

they claimed, they called upon the architects and requested the final statement.

It appears the architects adjusted the accounts, allowed for certain extras and deducted for certain work left off, and gave either Arnold or Taggert a final certificate for \$1,747. At the time it appears that this amount did not meet with the contractor's approval and he handed the certificate back to the architect. Sometime afterwards, however, both the contractors called upon the architects and asked for the certificate. The architects, or one of them, thereupon informed them that he had made out one certificate and that he would not make out another.

Bournique, the owner, it seems refused to pay without the presentation of the certificate, and the dispute culminated in Arnold & Taggert filing suit to recover the balance claimed as due. The trial in the lower

court resulted in a judgment in favor of Bournique, the court taking the position that the contractors could not recover without producing the certificate of the architects. From this judgment an appeal was taken to the Supreme Court, where in passing upon the record and in

stating the general rule followed in cases of this kind the court, in part, said:

### The General Rule

"Where by the terms of a contract under which materials are furnished and labor is performed in the erection of a building, it is provided that payment shall only be made upon the certificate of an architect, the law is well settled that the obtaining of such certificate is a condition precedent to the payment of the money, and an action cannot, as a general rule, be maintained to recover the money until the certificate has been obtained from the architect. \* \* \* If, however, the materials have been furnished and the work completed according to the contract, and a certificate has been demanded from the architect and fraudulently withheld by him, the contractor will be relieved from the necessity of procuring the architect's certificate. \* \* \*"

The court then said:



"This Amount Did Not Meet with the Contractor's Approval, and He Handed the Certificate Back to the Architect."



"By the terms of the contract itself the parties had agreed that in case of disagreement \* \* \* the decision of the architect should be final. \* \* \* The execution and delivery of the certificate by the architects was final and conclusive upon both the plaintiffs and the defendant, unless fraud or mistake was shown, which is not pretended on either side. \* \* \* When architects had adjusted the accounts, determined the amount due, executed and delivered to plaintiffs [the contractors] a final certificate, the rights of the parties became fixed. The fact that the plaintiffs did not keep the final certificate, but handed it back to the architect, did not change the situation or rights of the parties. \* \* \*

"It is, however, claimed that the defendant could only be made liable to pay upon the presentation of the certificate to him by the plaintiffs, and, as the plaintiffs failed to present the certificate, they could not recover. We do not concur in that view. \* \* \* Suppose plaintiffs had lost their final certificate after it was issued, and it had been destroyed, so that it never could be presented to defendant, would they be precluded from a recovery? A rule of that char-

acter would be unjust, and might in many cases result injuriously to parties. The presentation of the certificate was not one of the substantial requirements of the contract. As has been substantially said before, the decision of the architects, reduced to writing, and signed by them, was the substantial act which determined the right of plaintiffs to the money, and determined the obligation of the defendant to pay. \* \* \*

The Supreme Court thereupon reversed the judgment rendered in the lower court. Holding, in effect, that the contractors, in the light of the circumstances of this case, were entitled to recover the balance due them, without presenting the certificate of the architects,

This for the reason that, according to the contract, the architects were made the judges of any differences that might arise; and that when the architects had adjusted the accounts, and executed the final certificate, the contractors were entitled to the amount found due. And that the arbitrary refusal of the architects to return the certificate, or issue another, could in no way affect the contractors' right to what had been found due them.

## "Cow Palace" Equipped with Special Windows

LARGE DAIRY BARN BUILT FOR MAYOR COUZENS, OF DETROIT, AT COST OF \$97,000

CONTRACTORS who erected this building shown here referred to it as a regular "cow palace," and the name has stuck, for the building, which houses 85 well-fed Holstein-Friesian cows, cost \$97,000.

It was erected for James Couzens, mayor of Detroit, who has built among the hills of Bloomfield Township a modern dairy.

The building is of English architecture, the front 214 feet long, faces on the highway, and wings extending from each end are 100 feet long. The depth and width of each wing is 42 feet. The steel windows

in the barn are of a special type, having a three-pane ventilator "bottom hung to open in."

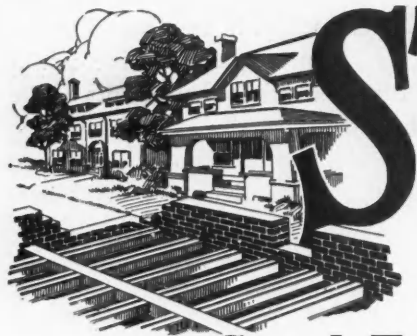
The steel windows afford an abundance of light and ventilation, while the arrangement of the interior is such as to give the most sanitary surroundings.

The most gratifying results have been obtained in the way of increased production. The milk received per cow is above the average and the total weight received each day averages one ton.

The milk is separated in a creamery adjacent to the barns and each day is brought to Detroit, where it is bottled and distributed.



"Cow Palace" Built for Mayor Couzens, Millionaire Mayor of Detroit, Who Has Built a Large Dairy Farm at Bloomfield. This Barn Cost \$97,000, is of English Architecture and Has Special Steel Windows.



# STEEL LUMBER Construction

## Steel Truss in Roof Construction

VERY POPULAR IN PUBLIC GARAGES BECAUSE OF FIREPROOF QUALITIES AND PERMANENCY—HOW NAILING SCREEDS ARE USED

By Gilbert H. Canterbury

*EDITOR'S NOTE—This is the second article of a series on the use of steel lumber in modern construction. Readers are invited to ask questions pertaining to this subject. Answers to all inquiries of general interest will appear each month in this department. Write in your problems now.*

“WHEN you drive into a strange town looking for repair service pick out a garage with a curve roof and nine times out of ten you will find a business concern operated by live, up-to-date people,” declared an observing automobile tourist the other day. Whether or not many other tourists are following this same quaint custom it would be difficult to learn, but certain it is that other things being equal, the average garage owner would prefer a curve roof on his building.

A certain amount of engineering ability is required to design a curve truss and furthermore materials of known qualities should be used. For these reasons the steel truss

has come into enormous favor in garage construction. Steel trusses are designed by engineers with rolled structural shapes and fabricated at the structural steel plant. Steel lumber, furnished



Interior William A. White Garage, Emporia, Kan., Showing Steel Lumber Joist Floor and Roof Construction Supported on Cast Iron Columns and Structural Steel Beams. It was Designed by W. F. Marx, Architect, Emporia.

also by the structural steel plant is used for floors and for roof joists. This construction supplemented by masonry bearing walls is completely incombustible



Workmen Spreading Cement Roof on Metal Lath Supported by Steel Lumber Joists Resting on Structural Steel Truss. The Metal Lath Is Clipped to the Top of the Joists as Centering for 2-Inch Concrete Floors and Roofs and Clipped to the Bottoms for Coat of Plaster.



and practically everlasting.

Accompanying pictures show a St. Joseph, Mo., curve-roof garage following this type of construction. The smaller picture shows the manner of applying the cement to fire-proof roof, metal lath having been fastened to tops of steel lumber joists and the cement slab spread over the lath.

In another picture is shown an interior view of a garage in Emporia, Kan., designed by Architect W. F. Marx, of Emporia, and owned by William A. White, the novelist. In this garage steel lumber joists are supported on cast-iron columns and structural steel beams. The picture was taken just at the time the first floor slab was being spread.

Still another picture shows an open view of the first floor on the Bennett Motor Company garage in Ebensburg, Pa. In this construction, structural steel beams span from bearing walls to bearing walls and steel lumber joists carry the floor loads between these beams. The beams were furnished from the structural steel plant with shelf angles riveted on the webs and the steel lumber joists rest on these shelves. Picture shows metal lath being spread over the steel lumber joists preparatory to the spreading of a thin concrete floor slab.

### Steel Lumber Floors

Standard fireproof steel lumber floor construction is composed of steel lumber joists as supporting members with expanded metal lath clipped to tops of joists as reinforcing and centering for 2-inch concrete floor slab and expanded metal lath clipped to the bottoms of joists to which is applied seven-eighths of an inch of cement plaster. This is the type of floor construction used in schools, hotels, big office buildings and all kinds of large structures.

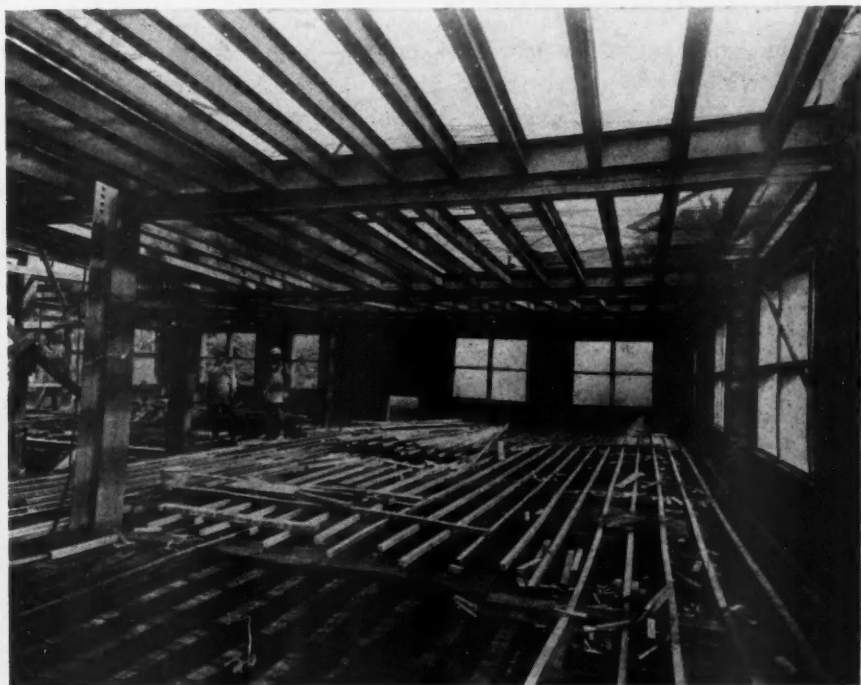
In residence construction the bottom lath and ceiling plaster is usually dispensed with in first floor construction, the joists being left open in the basement. Another popular use of steel lumber in residence floor construction is to finish off the floor with the usual wood subfloor and wood surface and to clip expanded metal lath at the bottom of the joists and apply a plaster finish to the basement ceiling.



Curve Roof Garage, St. Joseph, Mo. The Light Structural Steel Trusses Are Supported on Brick Bearing Walls with Steel Lumber Floors and Roof.

In average construction, wood floor finish is used and in connection with steel lumber joints, is nailed to screeds fastened directly on tops of the joists. Usual practice is to apply the expanded metal lath first. Split 2 by 4s to form 2 by 2s make the best screeds and these are fastened to the steel joists by driving 12d wire nails into the joist web. These nails drive just as easily and smoothly as tho the joists were wood.

One of the accompanying pictures show steel lumber joists supported on structural steel columns and beams with expanded metal lath in position.



Nailing Screeds. Placing Nailing Screeds for Wood Finish in Fireproof Steel Lumber Floor Construction. Wood Flooring Is Used in Average Construction and Is Nailed to Screeds Fastened on Top of the Joists.



Recently Completed Factory of Bankers Supply Company, Chicago, Designed by Shankland & Pingrey, Chicago, Architects and Engineers. It Demonstrates the Effective Use of the Window Wall or Steel Sash in a Monitor Roof Type Daylight Factory.

## New Sunshine Factory Model of Efficiency

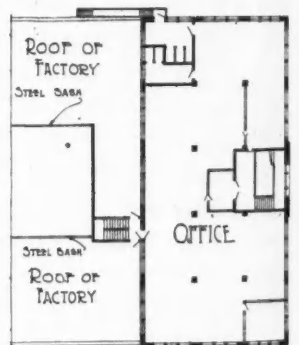
BANKERS SUPPLY COMPANY PLANT IN CHICAGO BUILT TO PROVIDE MAXIMUM OF LIGHT THRU WINDOW WALLS

**A**RTIFICIAL LIGHT, no matter how perfect, will not compensate for the glorious soothing beauty of natural sunshine. Both as a stimulant to energy and disinfectant against filth and disease, the light of the sun is unexcelled. We all know the too recent history of the sweatshop, that dark, dingy, crowded factory of yesterday which exacted its toll of sight, health, and vitality.

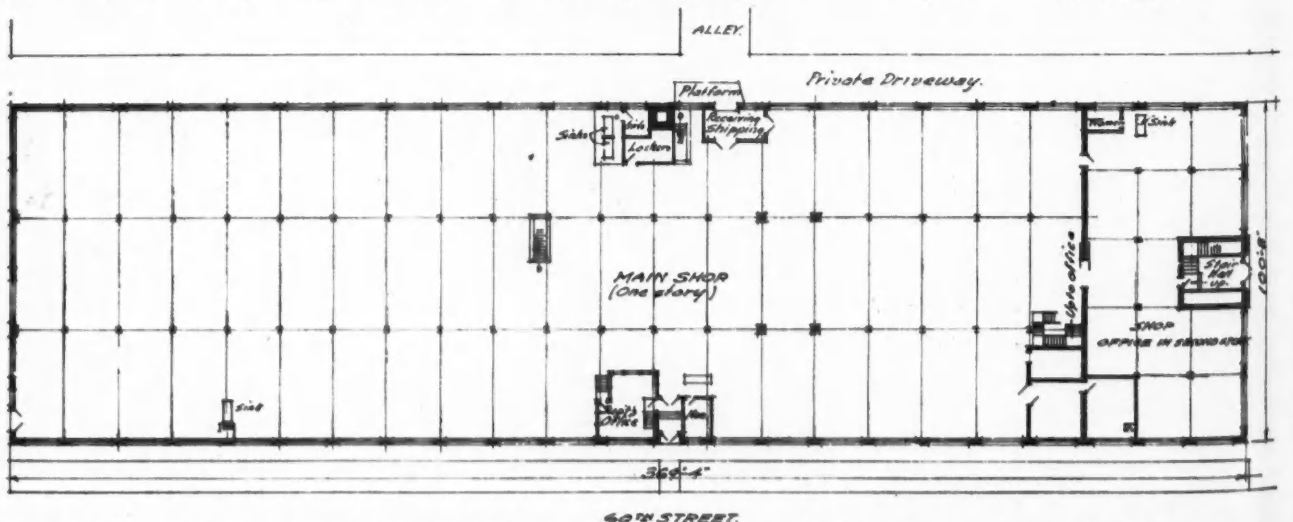
Thanks to the initiative of the architect and builder this blot on the name of industry has been eradicated. Thru the introduction of the solid window wall and the modern daylight factory, workers have been endowed with workshops that are cheerful, healthful and inspiring. As an excellent example of modern factory construction the factory of the Bankers Supply Company, Chicago, shown here, stands forth very

prominently. Designed by Shankland & Pingrey, Chicago architects, it is not only attractive in exterior appearance, but decidedly efficient in arrangement and equipment. The walls are an almost unbroken expanse of windows. Standard steel sash with special ventilating features have been used thruout.

The front facade is brick with stone trim. A very pleasing entrance leads to the offices which occupy the upper floor in the front section of the building. Beyond this the factory is one story in



SECOND FLOOR.



60th STREET.

First and Second Floor Plans of Factory Illustrated Above. Note the Arrangement of the Steel Columns and Extra Reinforcing on Columns Supporting Water Tank. This Factory is 100 Feet 8 Inches Wide and 369 Feet 4 Inches Long.



height, of steel and brick construction. Steel columns supporting the section on which the water tank is located are encased in concrete. The factory is 100 feet 8 inches by 369 feet 4 inches.

In the view of the interior the effectiveness of the excellent lighting facilities is shown very clearly. The floors are paved with wood blocks, which have been found very efficient in factory construction. The roof is monitor in type which gives additional lighting expanse. J. Rodatz was the contractor.



**Farm Boarding House**

*(Continued from page 115.)*

On farms large enough to require a building of this size distances from fields to house are likely to be great, and a great deal of time consumed going back and forth for meals. Therefore it is important that time lost on the way may be made up as far as possible by quick service in the dining room. The kitchen is large and well arranged and was laid out with this thought especially in view. In the basement there are ample spaces for store and fuel rooms, heating and lighting plants, pumps and laundry. To provide a recreation room with space for billiards and other games, which would usually prove a worth-while feature, the unexcavated space under the right wing of the building may be used, running down a stairway from the right side of the living rooms.

The foundation and walls of the building are of plain-face granite surfaced concrete block. The sills, lintels, exterior columns and exterior trim are of cast concrete. The roof is of tile, with large overhanging eaves, to shield against the heat of the sun. The roof has an extremely large area available for catching rainwater for the cistern.



**Catching the Public Eye**

THERE are more ways than one of attracting the attention of the passing public, but the Century Lumber Company, Des Moines, Iowa, has adopted one of the most effective schemes. They have installed a large Western Union clock with 18-foot dial on the front of their five-story modern office building, shown in the illus-

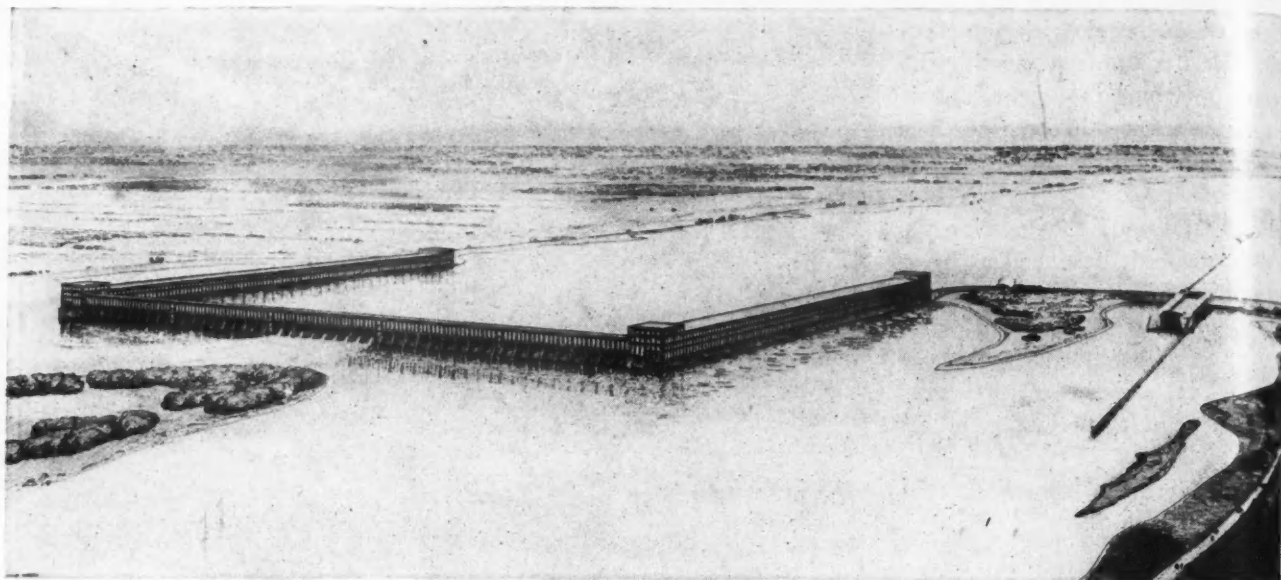


Interior of Bankers Supply Company's New Factory, Showing How Lighting Facilities Have Been Improved by Use of Steel Sash with Ventilators. The Floor Is Paved with Special Wood Blocks.

tration. Knowing the inherent attraction of a clock wherever it may be, Charles and Edward Weitz, who are the progressive heads of this live lumber business, have capitalized the idea with great success. The clock was installed as an advertisement and has focused the attention of many citizens who otherwise might not be interested in the building. The officials of this lumber concern believe in the power of advertising their business as well as in any other. That accounts no doubt in large measure for the wonderful success, which this progressive firm of lumber dealers has made.



Advertising Does Pay. If You Don't Believe It Ask the Century Lumber Co., Des Moines, Iowa, One of the Most Progressive Firms in That Section. Their New Office Building Attests to This Fact. The Western Union Clock Attracts Attention—Attention Gets Business.



Panoramic View of Proposed Dam on St. Lawrence River, to Cost \$200,000,000 and Furnish 5,000,000 Horsepower. Five Such Dams Are Contemplated at a Total Cost of \$1,300,000,000.

## Great St. Lawrence River Water Power Project

PLANS HAVE BEEN DRAWN FOR PROPOSED ST. LAWRENCE RIVER WATER POWER DAM TO COST \$200,000,000

FOR generations a dream of the engineers of the country has been the harnessing of the St. Lawrence River. Like the building of the Panama Canal, it remained in the dream stage for many years. Long dismissed by the cautious as a task too huge to be attempted, the St. Lawrence project is now being seriously considered.

For the last eight or nine months hearings have been held in different parts of the United States as to the best use for navigation and power purposes of the St. Lawrence River. These hearings have been held before the International Joint Commission, composed of three members from the United States and three Canadian members, who were originally appointed for the purpose of adjusting all differences between the United States and Canada respecting boundary streams. The Commission has now before it for consideration recommendations that, if adopted, will mean, probably, the eventual building of five dams in the St. Lawrence (two internationally located and three wholly in Canada), which will produce, when completed, 5,000,000 horse power, 4,000,000 of which will be available for use in Canada and 1,000,000 in New York State and vicinity. The cost of construction is figured at approximately \$1,300,000,000.

The projected dams and power houses at different points in the St. Lawrence will, according to experts, release within a radius of 300 miles (which includes most of New York State and Northern New England, as well as large areas in Canada), power at less than half the cost of present steam power, thus relieving the coal situation and providing new resources of power for lighting systems, traction systems and all kinds of manufacturing undertakings. Instead of the

present slack water navigation between Montreal and Lake Ontario, and the score of locks now in use along the 120 miles of the St. Lawrence, there will be only six locks, making vast open stretches for speeding up navigation.

Thru this series of dams and power houses it is believed that it will be possible to increase the flow of the St. Lawrence River by controlling the level of Lake Erie. Where now a minimum of 150,000 cubic feet of water per second must be figured on, this vast project undertakes to "balance the flow" of the St. Lawrence River, using Lake Ontario and Lake Erie as reservoirs, and thus make available for navigation and power approximately 200,000 cubic feet per second.

Of course the engineering difficulties to be met with are gigantic. The first steps have already been taken in using diamond drills to find rock bottom on the river bed, approximately sixty feet below the surface of the water. The depth of foundations at the proposed sites, and the general difficulties incident to uncovering these foundations, are matters which complicate the undertaking.

Another problem to be met is that of ice on the river. The proposed plant must be so designed that it can safely and automatically handle as much as 4,000 tons of ice per minute, an amount equal to a trainload of ice three-quarters of a mile long every minute. Ice defenses to break up blocks are necessary. In addition, the masonry around the control system thru which the water rushes must be heated to a temperature above 32 degrees Fahrenheit, so that the water will not freeze on the masonry and block the flow.

Revolving pieces of machinery weighing a million

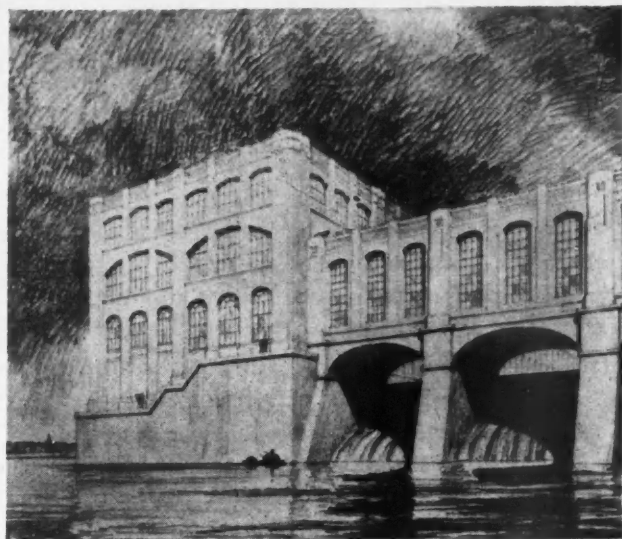
pounds must be so accurately constructed and installed as to maintain clearances not to exceed two one-thousandths of an inch. Special tools and special cofferdam construction, costing in the aggregate more than \$35,000,000, must come into commission to achieve the desired results. Automatic governors will have to be perfected capable of instantly controlling the quantity of water used thru the turbines for all of the various load changes incident to the distribution of the power over more than 2,000 miles.

These are a few of the problems that the projected plans must meet. The first section to be built will be a great dam and power house stretching across the St. Lawrence from the American to the Canadian side. Such a structure will cost approximately \$200,000,000. This dam by itself will release power over a large area. One of the comforting features of the project when the tremendous sum to be raised by private capital to finance it is considered, is that each section of the work is complete in itself and justifies its own existence. Yet each section, useful in itself, is but a part of a vast scheme, sometimes said to be three times as great an undertaking as the building of the Panama Canal.

Complete plans for the work extending over five years or more have been drawn up by the offices of Hugh L. Cooper of New York, who is an expert hydraulic engineer and who built the Mississippi Water Power Project. In a recent article in the New York Times Magazine Mr. Cooper said: "No engineering proposal in the past even approximates in magnitude and far-reaching influence upon the general public the engineering proposal that is now before this International Joint Commission with respect to the St. Lawrence River. Aside from releasing 5,000,000 horse power, the engineering plans will show and competent engineering authorities will agree that the problems of preserving the scenic beauty at Niagara Falls and facilitating navigation on the Great Lakes system while bringing to highest development the water powers of the region may be solved in a way that will stand out as a world monument to engineering—an achievement compared to which all past achievements, however great they seemed at the time of the accomplishment, will look small.

"The World War has removed from the normal available man supply more than 20,000,000 men. Probably 85 per cent of these men belonged to the laboring class. As time goes on engineers must provide substitutes for the loss of man power, failing in which the world must function on a lower standard of living.

"Our modern civilization requires, normally, one horse power for every five of its people. Every twenty-five hydro-electric horse power saves for one year the labor of one man engaged in producing steam horse power—when we come to figure all the expenditures from the mine to the ash heap. To produce any given quantity of electrical energy, using



Close-Up View of One of the Proposed Dam Structures. These Power Houses Will Release Power at Less Than Half the Present Cost Over a Radius of 300 Miles.

steam as a prime mover, requires seventy times as much man power as is required where hydro-electric power is the prime mover. Every hydro-electric horse power saves, on the average, ten tons of coal per annum.

"In 1840 the ordinary water wheel had an efficiency of 50 per cent. Today it is 90 per cent. In 1890 transmissions of power ten miles were considered marvelous. Today transmission of 350 miles is quite feasible. This great transmission reach brings into consideration a market that will justify the vast expenditure required for the initial installation on the St. Lawrence. In my opinion the application of present-day standard engineering practice to the St. Lawrence will result in the generation of power on the St. Lawrence at a price less than it can now be produced at Niagara Falls, and thus give to Eastern New York and Canada advantages, with reference to cheap power, like those hitherto supposed to belong exclusively to Niagara Falls, the great natural water power machine of the American continent.

"Another thing—this project will relieve the coal situation. The development of six and one-half million horse power will substitute sixty-five million tons of coal per annum in the zone easily within transmission distance. The saving of this coal in the United States and Canada will reduce the price of coal to the household consumer and to the remaining steam-power consumers. High coal prices are driving industry out of New York and preventing expansion in the state of New York and Canada."



**N**OT a few leaders in the construction industry expect a revival of construction activity in the spring, to be followed by increased activity thru the summer and fall. Awakened interest in construction is shown in that the amount of contemplated work reported in December aggregated more than for any month since June.



## Floor Finishing

HOW VARNISH IS APPLIED TO VARIOUS TYPES OF FLOORS TO PRESERVE THE FINISH AND ADD TO THE ATTRACTIVE APPEARANCE

By C. M. Lemperly

**T**HERE is probably no surface about the home that receives the severe wear and tear that the floor gets. Whether it is the baby's kiddy car or the nails in father's heels, the result is much the same. To make matters worse, there is nothing quite so noticeable as a shabby, worn floor.

The varnished floor is here to stay because small rugs are popular both for their beauty and for their being more convenient to handle than the old-style carpet. People are growingly appreciative of good woods. This has brought about the necessity for imitation or grained effects, where soft pine floors are used, or for the old floor to be refinished. We will endeavor to outline briefly the best treatment for the various types of floors to be finished.

When considering floor protection, it becomes very apparent that wood or linoleum floors are themselves very easily dented or bruised. Even maple or birch, our hardest woods, will show marks where the piano is moved or a heavy article dropped. This denting occurs to a lesser extent, with walking. The most durable floor finish must, therefore, be one that will cling to the surface and not be brittle so that it chips off when bruised. The modern high-grade floor varnish is such a product. This varnish should contain a relatively large percent of pure linseed oil to provide this elasticity. A good floor varnish will not powder white when scratched or discolor with either hot or cold water.

An important point to remember in varnishing floors

is that thin coats are better than heavy coats. The thin, tough varnish film that clings close to the floor does not scuff up and mar nearly as readily as a heavy film. It is well to keep this in mind so that successive varnishings over a period of years will not pile up the material too much and become unsightly for this very reason. The best floor varnish is considerably thinner in body than the furniture varnish, so that the resultant film will be thinner and tougher than otherwise.

### The First Varnish Coat

The first varnish coat should be thinned at least 10 per cent with pure spirits of turpentine. This causes the varnish to penetrate into the wood and adhere firmly. The use of shellac as a first coater on floors is not advised. Shellac does not penetrate the wood. While it dries with an extremely hard film, it stays on the top of the wood and prevents the varnish penetrating and is liable to cause chipping off.

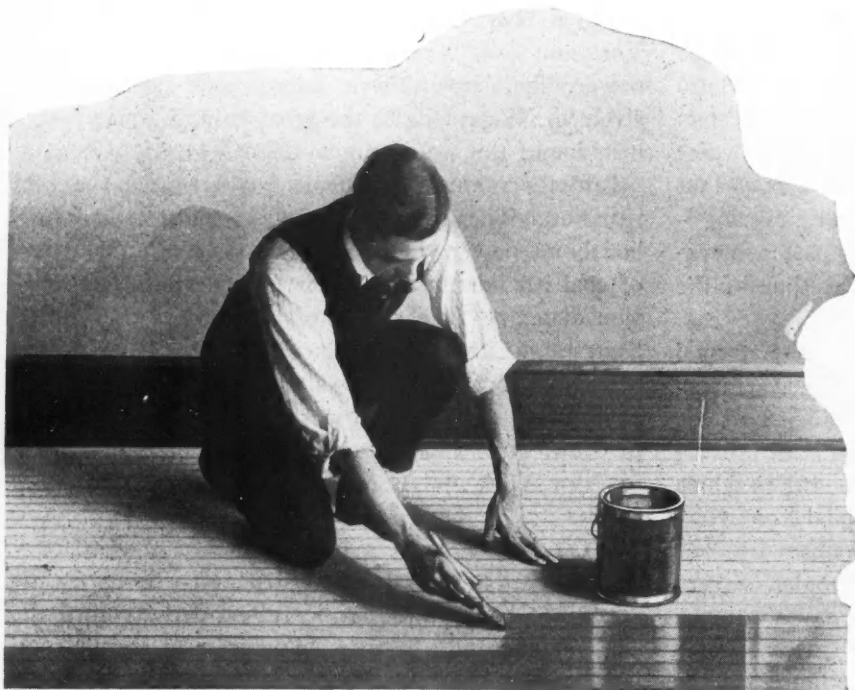
When varnishing or painting a floor start at the edge of the floor and apply the finishing material down the length of the board, not across. This will prevent the appearing of laps.

A good floor varnish or paint should dry hard over night, if properly applied. Paint and varnish require plenty of fresh air to dry thoroly. See that the room is well ventilated and in the winter have the temperature about 60 degrees with the window open enough to allow the fumes to pass off.

### Oak Floors

Oak is the wood most generally used for floors in all types of residences. Oak is an open grain wood with very pronounced grain and open pores. Unless these pores are filled so as to make the surface level for finishing, the floor will have a surface of hills and valleys, whose ridges will wear quickly, having to carry the load they would not get were the surface level. Paste fillers are provided for this purpose. These come in paste form to be thinned as directed by the manufacturer. This filler is applied with a brush and after standing for a few minutes, the surface is wiped clean, rubbing across the grain of the wood with a soft cloth. This removes all the paste filler except that which has entered the pores of the wood.

(Continued to page 137.)



Varnished Floors Are Here to Stay. They Gain Their Popularity from Their Beauty in Appearance and Convenience as Compared to Carpet. Builders Should Be Acquainted with the Problems Involved in Covering New and Old Floors with Varnish.

# DESIGN OF SAFE CONSTRUCTION

By Charles W. Leigh

Associate Professor of Mechanics, Armour Institute of Technology

## Columns Figured by Winslow's Formula

ARTICLE 14 OF AN EXTENSIVE SERIES ON STRENGTH OF MATERIALS

IN selecting a column formula for figuring the columns of a building, the designer is often restricted in his choice. If the building is to be constructed in cities, the Building Ordinances specify the formulas to be used. For many years designers used Euler's, Gordon's and Rankine's formulas. These formulas are based more directly on theory, that

required a rather close observance of the so-called "slenderness ratios." These formulas are based on certain definite end conditions, fixed positions of loads and a uniformity of materials. But such conditions are not realized in practice. Then, too, the above-mentioned formulas require rather tedious computations. Engineering practice now calls for the use of straight-line formulas. Experiments conducted for several years with all kinds of materials under average working conditions have shown that the straight-line formulas give results absolutely reliable, with proper factors of safety.

I have taken the column formulas specified by the Chicago Building Ordinances, and will show how to figure columns by them. The reader will find that while those of other

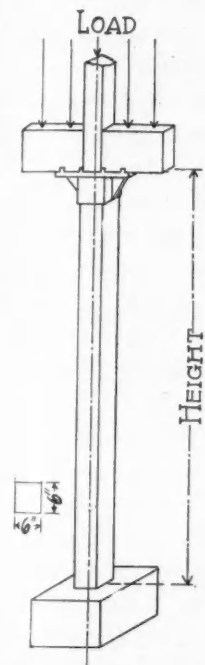


Fig. 1. Showing Typical Column with Central Load.

localities may differ it will be in certain constants used. No trouble should be found in their application.

The columns considered will carry loads assumed to be applied at the center. This load may come from another column, or from beams resting on the column, or both.

For wooden columns the Chicago Ordinance specifies the formula (called Winslow's formula):

$$p = C \left( 1 - \frac{L}{80D} \right) \dots \dots \dots 1$$

There  $p$  = stress per square inch developed by load,  $C$  is the working compressive stress of the lumber parallel to the grain,  $L$  equals the length in inches and  $D$  the least diameter or dimension in inches.

The specifications further require that the maximum length shall not exceed thirty diameters—that is,  $L$  divided by  $D$  must not be greater than 30.

Suppose the problem is to find the safe load that a Douglas fir column 6 by 6 inches will carry, Fig. 2. The actual size of a 6 by 6-inch is  $5\frac{1}{2}$  by  $5\frac{1}{2}$ . Then  $D = 5\frac{1}{2}$  and  $A = 5\frac{1}{2}$  by  $5\frac{1}{2} = 30.25$  square inches. A safe working compressive fibre stress parallel to the grain of Douglas fir is 1,000 pounds. Then  $C = 1,000$  and  $L = 10 \times 12 = 120$  inches. Now,  $L$  divided by  $D$  is 120 divided by  $5\frac{1}{2} = 22$ , approximately. Since the quotient is less than 30, we may use Formula 1.

Substituting the above values:

$$p = 1,000 \left( 1 - \frac{120}{80 \times 5\frac{1}{2}} \right)$$

$$p = 1,000 \left( 1 - \frac{120}{440} \right) = 1,000 (1 - 3/11)$$

$$p = 1,000 \times 8/11 = 727.3 \text{ pounds.}$$

But the total load  $P = p A$ .

$\therefore P = 727.3 \times 30.25 = 22,000$  pounds, or 11 tons.

In order that the reader may appreciate what effect the length of a column has on the total load carried, let us take a 6 by 6-inch column 14 feet long and find the safe load it will carry.

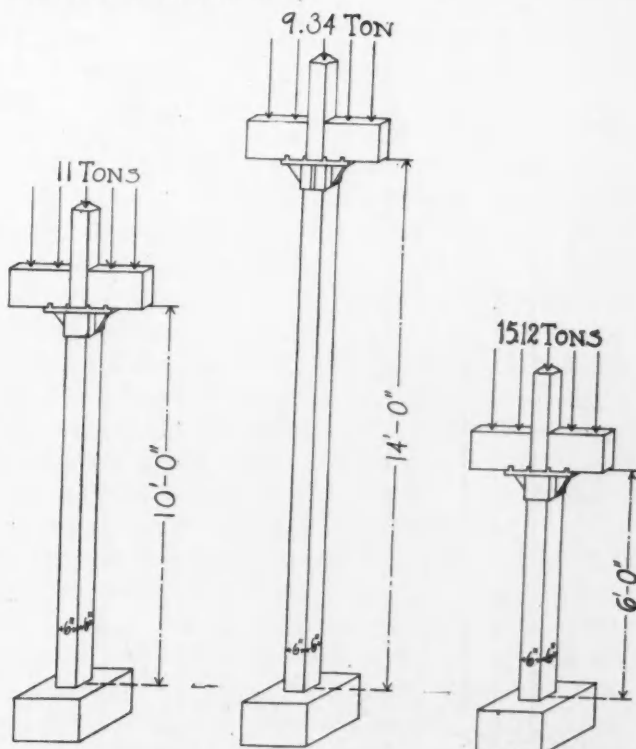


Fig. 2. Showing Safe Load Douglas Fir Column 6 by 6 Will Carry if 10 Feet Long.

Fig. 3. Showing Load Same Kind of Column 14 Feet Long Will Carry.

Fig. 4. Safe Load Carried by Column 6 Feet Long. No Buckling Effect Is Considered.

As before,  $C = 1,000$  pounds,  $D = 5\frac{1}{2}$  and  $A = 30.25$  square inches. But  $L = 14 \times 12 = 168$  inches. From Formula 1:

$$\begin{aligned}
 p &= 1,000 \left( 1 - \frac{168}{80 \times 5\frac{1}{2}} \right) \\
 &= 1,000 \left( 1 - \frac{168}{440} \right) = 1,000 \left( 1 - \frac{21}{55} \right) \\
 &= 1,000 \times \frac{34}{55} = 618 \text{ pounds}
 \end{aligned}$$

But  $P = pA$ .

$$\therefore P = 618 \times 30.25 = 9.34 \text{ tons.}$$

This result shows that by an increase of the length from 10 feet to 14 feet, the load was decreased from 11 tons to 9.34 tons.

But  $L$  divided by  $D$ , is 168 divided by  $5\frac{1}{2} = 30$ , approximately. Then by the Chicago Building Ordinance, a 14-foot column is the longest 6 by 6-inch that could be used.

If this 6 by 6-inch timber were used as a short column—that is, one in which  $L$  divided by  $D$  does not exceed ten or twelve—the full compressive fibre stress of 1,000 pounds could be used. Then

$$P = 1,000 \times A = 1,000 \times 30.25 = 30,250 \text{ pounds.}$$

$$P = 15.12 \text{ tons.}$$

That is, if a 6 by 6-inch short block were used it would safely carry 15.42 tons. The buckling effect is then quite evident to the reader, as the length of the timber is increased.

Figs. 2, 3 and 4 show the columns in their relative lengths, with the loads that they will safely carry. In

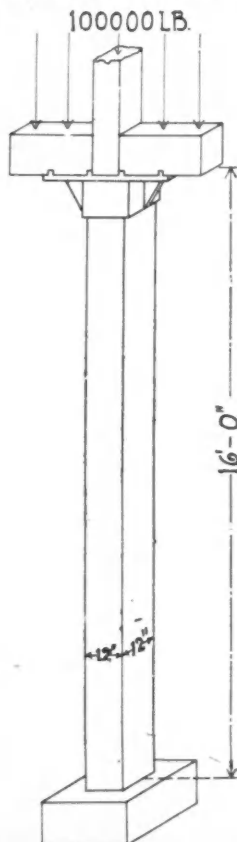


Fig. 5. Showing Size of Column Needed to Support Load of 100,000 Lbs. if Length is 16 Feet.

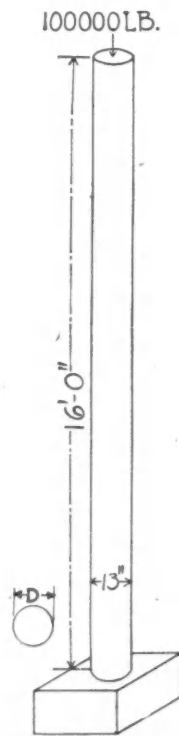


Fig. 6. Showing Circular Column Carrying Specified Load and Diameter Needed.

Fig. 4 no buckling effect is considered. The reader thus has a graphic illustration of the buckling effect on beams; or, in other words, the effect of the length of column on the safe load it will carry after the length has passed a certain limit.

A column formula specified by the New York Building Laws is:

$$\frac{P}{A} = 1,000 - 18 \frac{L}{D}$$

in which  $P$  is the total load,  $A$ ,  $L$  and  $D$  stand for the same quantities as in the problems solved. If we let  $A = 30.25$ ,  $L = 120$  and  $D = 5.5$ , then

$$\begin{aligned}
 \frac{P}{30.25} &= 1,000 - 18 \frac{120}{5.5} \\
 &= 1,000 - \frac{2,160}{5.5} = 1,000 - 393
 \end{aligned}$$

$$P = 30.25 \times 607 = 19,360 \text{ pounds.}$$

$$P = 10 \text{ tons, approximately.}$$

This formula gives a smaller load than the Winslow Formula, but it is on the side of safety. There are many other formulas proposed and used, some of which give higher results than the formulas used. The results are probably safe enough, but the designer should be very careful in the use of such equations, showing preference to formulas tried and approved by a body of experienced engineers, such as are found in our large cities.

Suppose the builder must choose a timber to carry a load of 100,000 pounds as a column 16 feet long. To find the cross-section area or size of the timber:

Now the required area depends on the compressive stress, and on the ratio of the length of the column to its least dimension. In order that we may find the least possible dimension of the area the column is treated as a short block. In that case the safe stress is 1,000 pounds per square inch. There is no tendency to buckle. The required area is found by dividing the total load by the fibre stress or

$$A = \frac{W}{1,000} = \frac{100,000}{1,000} = 100 \text{ square inches}$$

But  $A$  being a square is equal to the product of its dimension or  $A = D \times D = D^2$

$$\therefore D^2 = 100$$

$$D = 10 \text{ inches.}$$

Then the least dimension must be 10 inches. But when the column 16 feet long is considered, the allowable fibre stress is less and is found by Formula 1, using  $D = 10$  and  $L = 16 \times 12 = 192$ . Then

$$p = 1,000 \left( 1 - \frac{192}{80 \times 10} \right) = 1,000 (1 - .24)$$

$$p = 1,000 \times .76 = 760 \text{ pounds per square inch.}$$

Since  $W = 100,000$  pounds and  $p = 760$ , the required area is

$$A = \frac{W}{p} = \frac{100,000}{760} = 132$$

If the section of the column were a rectangle, a  $10 \times 14 = 140$  square inches would be satisfactory. Since a square section is to be used a 12 by 12-inch



would be required. The actual size is 11½ by 11½-inch and 11½ × 11½ = 132.25 (Fig. 5).

The reader must remember that the value of p from Winslow's Formula is the fibre stress which has the same effect on the column as a fibre stress of 1,000 has, when the same timber is used as a short block—that is, when L divided by D is not more than twelve.

When a round column is used, D is the diameter of the cross-section. Suppose the problem is to select a round 16-foot column for the 100,000-pound central load. As before, treat the timber as a short block, which can safely stand a compressive fibre stress of 1,000 pounds. When there is no tendency to buckle, the area necessary is found from

$$A = \frac{W}{1,000} = \frac{100,000}{1,000} = 100 \text{ square inches.}$$

But the section is a circle (Fig. 6) and the area

$$A = .7854 D^2$$

$$\therefore .7854 D^2 = 100$$

$$D^2 = \frac{100}{.7854} = 127$$

By extracting the square root

$$D = 11.5$$

Now putting this value of D in Formula 1:

$$p = 1,000 \left( 1 - \frac{16 \times 12}{80 \times 11.5} \right)$$

$$p = 1,000 \left( 1 - \frac{12}{57.5} \right) = 1,000 (1 - .21)$$

$$p = 790 \text{ pounds}$$

Since the load is 100,000 and the allowable fibre stress is 790, the necessary area is

$$A = \frac{100,000}{790} = 127$$

As before,  $A = .7854 D^2$

$$\therefore .7854 D^2 = 127$$

$$D^2 = \frac{127}{.7854} = 160, \text{ approximately}$$

Since 13 × 13 = 169, a value of D = 13 for the diameter of the column is sufficient to carry the load, Fig. 6.

As a check on the work, substitute D = 13 in

$$p = 1,000 \left( 1 - \frac{L}{80D} \right) = 1,000 \left( 1 - \frac{192}{80 \times 13} \right)$$

$$P = 1,000 (1 - .18) = 820 \text{ pounds.}$$

This is allowable stress on a 13-inch column. But the actual stress is found by dividing the total load 100,000 by the area of the cross-section, or

$$\frac{100,000}{.7854 D^2} = \frac{100,000}{.7854 \times 169} = 750 \text{ pounds}$$

But 750 pounds is less than 820 pounds and the design is on the side of safety. A little smaller column—say, 12.5 inches—could have been used.

The last two examples show that in selecting a column, the least dimension to consider is that for a short block where no buckling occurs. The value of

D thus found is then substituted in the Winslow Formula. This gives the allowable value for p the compressive fibre stress, from which the correct value of the area may be obtained. The reader must then check the dimensions of the column by substituting the new value of D in Formula 1. The value of p thus obtained must never be less than W, the total load divided by the area of the section.

The results of this article are obtained under the supposition that the columns have square ends and are centrally loaded. An eccentric load should be avoided if possible. If the load is off center the buckling effect is increased. The subject of eccentric loads will be discussed in some future article.

The next article will deal with steel and cast iron column formulas, as specified by the Chicago Building Ordinance.



### Floor Varnishing

(Continued from page 124.)

Do not use a liquid filler for floors. The material does not really fill the wood, but forms a brittle shell over the top of the wood, which possesses neither elasticity nor wearing qualities.

Allow the filled floor to dry forty-eight hours and then follow with three coats of good floor varnish. Allow each coat to dry thoroly and sandpaper with No. 0 paper before applying the next coat. The last coat may be rubbed with No. 00 steel wool to produce a dull satiny sheen if desired. A coat of floor wax may be applied over the final coat of varnish if preferred.

Frequently the floor is desired to be finished in a color darker than the natural color of the wood. With open grain woods this can be accomplished by applying first a coat of stain reduced to the strength desired, following with a dark color paste filler or the stain may be omitted and the dark filler used alone.

A dark filler makes the pores of the wood dark and emphasizes or brings out the character of the grain.

A transparent or light filler (the same shade as the wood) evens up the appearance of the wood, so the grain is not so noticeable.

Close grain woods such as maple, birch or pine, require no filler.

Many times the floor to be finished has been previously painted or is so badly stained, discolored or bruised as to be impossible to finish in either a varnish or stained effect. The treatment in such a case is either the application of a good inside floor paint or a grained effect to imitate the natural wood.

Floors are grained by first hiding the old finish or surface with two coats of ground color prepared for the purpose. A coat of prepared graining color may then be applied and grained as fast as applied with special graining rollers and combs, which are to be purchased from the dealer. When this is dry (the following day), follow with a varnish stain in the shade selected.

## Miniature Mazda Lamps in Elevator Service

SOME UNIQUE ARRANGEMENTS WHICH HAVE BEEN FOUND EFFICIENT IN LARGE OFFICE BUILDINGS

By C. F. Abbott

**E**LEVATOR lighting service divides itself into three classes: (1) the lamps used in the annunciators in the elevators themselves to signal the operators; (2) lamps used for threshold illumination to prevent passengers from stumbling on entering or leaving the car; and (3) those used in indicator boards of large buildings to show the elevator starters the positions of all the cars under their supervision.

In Fig. 1 is shown a typical lamp annunciator signal such as would be found in any hotel or private office building. The lenses on the right are of red glass and those on the left of white glass; these bring a signal to the operator that a passenger desires to go either down or up. Fig. 2 shows the annunciator with the cover plate and lenses removed. This illustrates



Fig. 1. Typical Lamp Annunciator Signal Such as Is Found in Any Hotel or Private Office Building. The Lights Are Red and White.



Fig. 2. Cover Plate and Lenses Removed from Annunciator. The Buzzer Above Is an Extra Signal to Attract the Operator's Attention.

the method of preventing one lamp from illuminating more than one lens behind which it is placed. The illustration shows a buzzer mounted just above the lamps in the annunciator box. This is used as an additional signal if desired or to attract the operator's attention. In the box just below the signal is a switch to disconnect the annunciator from service when the car is not running.

Current is transmitted to the cars by flexible cables and not by sliding contacts, as the former is much

more practical and efficient. The lights are automatically put out by a relay on a separate circuit which operates when the car has passed the floor signalled. The voltage of this latter circuit is usually considerably higher than that on which the lamps operate.

Many elevator manufacturers are now providing means of illuminating the thresholds of the cars to prevent injuries or annoyance to passengers entering or leaving the cars. Fig. 3 shows one method of threshold illumination which has met with considerable approval. Lamps for this service are of tubular construction and usually burn at a pressure of from 100 to 130 volts. There are generally two lamps per car, thereby not only obtaining better light distribution, but securing better reliability, as it is unlikely that both lamps would burn out at the same time. In the illustration the lamps were found to burn two in series on 115 volts. Other means of threshold illumination have been offered, one of which is an ordinary 25 or 40-watt lamp mounted in vertical position in a corner of the car near the door, and the light thrown on the threshold by means of a reflector. The threshold lamps are frequently arranged so as not to burn continuously, but light up only when the car doors open.

Indicator boards for showing chief operators or dispatchers the exact position of all the cars under their control are frequently used. Fig. 4 illustrates the board in the Woolworth tower, New York City. They consist of a vertical column of lights for each elevator, and each lamp representing a floor. Obviously the number of lights for an elevator and the number of floors served by that car are identical. The current transmission is virtually the same as in the elevator annunciator except that conditions are reversed. One lamp is illuminated all the time, representing the position of the car. The lamps used in these boards are similar to those used in the annunciators and are of

tubular construction, the T-3 bulb being preferred.

The source of current supply for the lamps used in the annunciators and indicator boards is either a motor generator or transformer. These lamps are rarely used on circuits of more

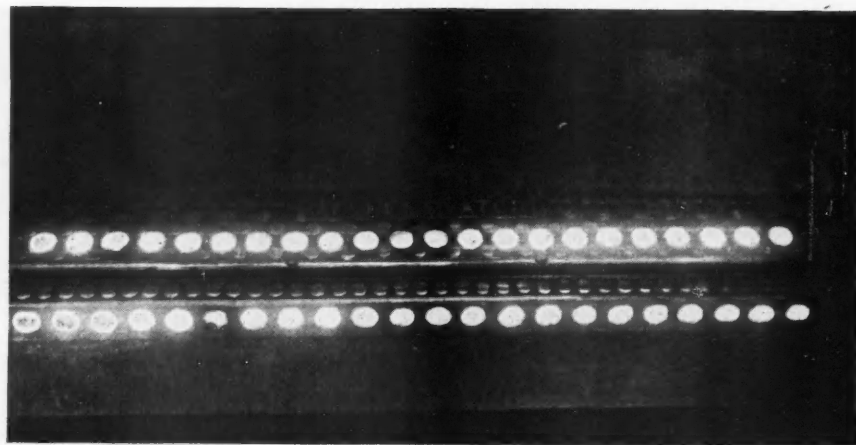


Fig. 3. One Method of Threshold Illumination. These Lights Light Up Only When the Car Doors Open. They Burn at a Pressure of from 100 to 130 Volts.

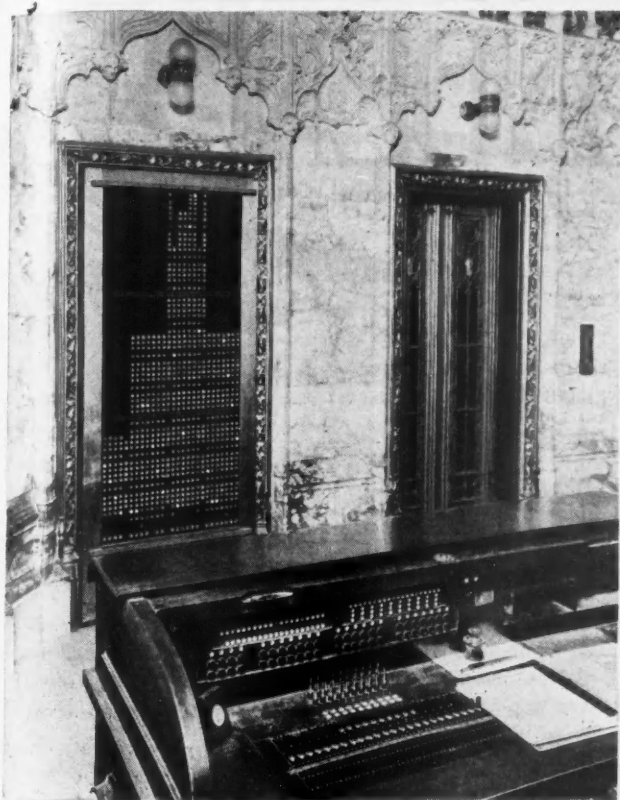


Fig. 4. Elevator Board in Woolworth Tower. It Consists of a Vertical Column of Lights for Each Elevator and Each Lamp Represents a Floor. It Indicates the Position of the Cars at All Times.

than 20 volts, and consequently the house voltage of from 100 to 130 has to be decreased by one method or the other, since it is impractical to construct low candlepower lamps to be used on circuits of 100 volts and over. This reduction, however, is satisfactorily accomplished by either a transformer on alternating current, or a motor generator where direct current only is available.

The variety of orders for annunciator lamps has made it advisable for lamp engineers to conduct a thoro investigation of the service for which the lamps are used, in an effort to reduce the number of types of lamps made for identical purposes. As a matter of interest, a list of several of the most popular types of lamps which are used for elevator annunciator or indicator service is given below.

Volts	Amp.	Bulb	Base	Overall Length
10	.17	T-3	Min. Screw	1 "
10	.26	T-3	Min. Screw	1 1/4"
17	.17	T-3	Min. Screw	1 1/4"
12	.17	T-3 1/2	Min. Screw	1 1/8"
14	.26	T-3	Min. Screw	1 1/4"
14	.26	T-3 1/2	Min. Screw	1 1/8"

Fig. 5 shows some of the various lamps found in service.

This does not, of course, show all the lamps which are used for this service, but it does show what a variety of orders the manufacturers receive, and how necessary and practical it is to reduce this number of

types. The advantages of having only one or two types of lamps for this service are that a better lamp can be developed, better deliveries can be made on it, the lamp can be offered at a lower price, and the dissatisfaction and trouble now encountered will be greatly lessened. This work has not as yet been completed, but it is well under way, and it is hoped that the customers will appreciate the reduced number of types of lamps for elevator annunciator service, and that they will co-operate with the manufacturers of equipment in order that this improvement may be brought about as soon as possible.



### Electricity on the Farm

(Continued from page 110.)

the supper dishes washed and all the neighbors will be there. It'll be a grand gathering of all the farm folks and a treat for us, and mother, the children are coming home!"

In order that this dream may be made to come true for the average farm housewife, it is necessary to wire the farm for electric service. Wiring the farm for service from small independent plants is different from that of wiring one for service from a central station. In the latter case the lamps and appliances used require a low amperage and high voltage, whereas in the former, they require a high amperage and a low voltage. One advantage of wiring for service from the independent plant is that if at any later time the

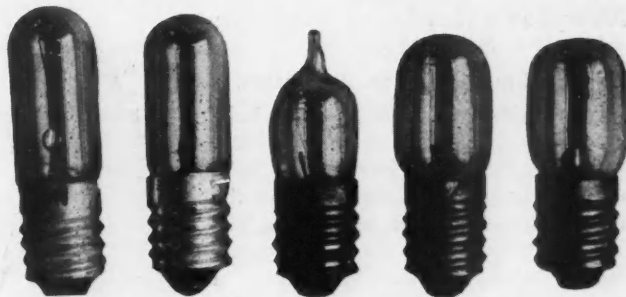


Fig. 5. Types of Mazda Lamps in Elevator Service. An Attempt Is Being Made to Reduce the Number of Types in Order to Make Delivery Better.

user wishes to connect to a central station line no wiring changes will be necessary other than fuses.

The size of wire most commonly used for 110-volt lighting circuit wiring is No. 14 which is satisfactory to a certain extent for 32-volt installations, but special circuits and outlets must be provided for all motors or heating appliances consuming over 300 watts; for circuits carrying several small loads, which aggregate 300 watts and for small loads operating at great distance from the plant. Because of these general exceptions No. 12 wire is better for the 32-volt wiring.

When wiring the farmhouse a great deal of consideration should be given to the future needs of the farmer. From time to time he will wish to add appliances to lighten the labor of the farm home, most of which will require special circuits and outlets and with this in view the total number of outlets should be installed when the house is originally wired.



# CORRESPONDENCE

Questions answered—ideas exchanged



## Several Important Questions Require Solution

To the Editor:

Fargo, N. Dak.

I have been a reader of the AMERICAN BUILDER for almost two years and I consider it the most valuable magazine of its kind.

I would like to learn thru the correspondence department the best method of sharpening the ordinary hand or cabinet scraper. I would like to have some reader explain the correct method of attaching the door check which is placed at the top of the door and how to adjust it. Where can one obtain a sectional view of this check, that is, from what company? If the jack rafters are placed 16 inches apart on centers what will be the difference in the length of each rafter?

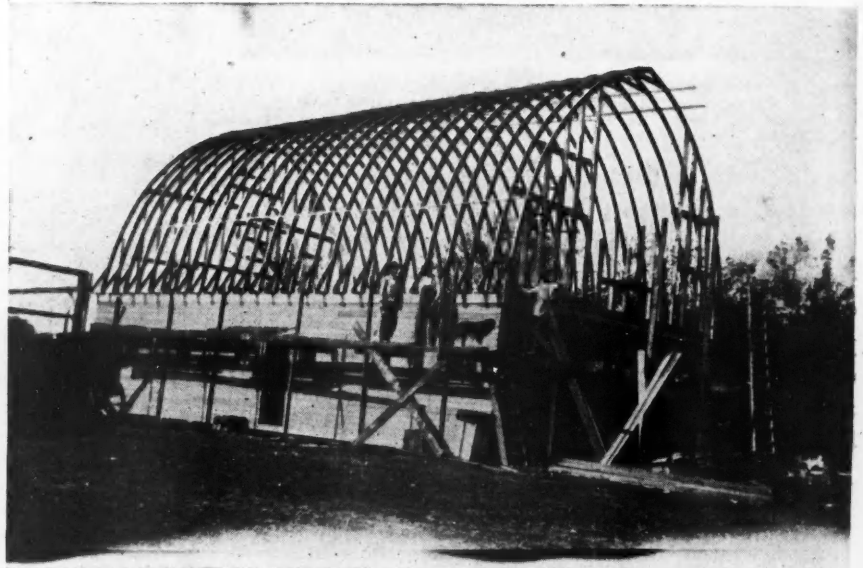
By the use of the steel square, how will I proceed to find the length of any one of the sides of this octagon and what will the figures for the mitre cut be?

J. H. LODDICH.

## New Barn Replaces Historic Structure

To the Editor: St. Paul, Minn.

I am enclosing pictures of a barn built by Gustav Edman of St. Paul, Minn., and crew, for Alfred Hoel, near Christine, N. Dak. They also show in the rear the old barn built in 1872 by Nils Hoel, first settler of Richland County, North Dakota. It was destroyed by a cyclone June 8, 1920. Rafters are made from 1 by 2, braced every 8 feet.



**New Barn Under Construction.** The Work Was Directed by Gustav Edman, Contractor of St. Paul, Minn. The Rafters Are Braced Every 8 Feet to Stand the Strong Winds in That Section.



**New Barns for Old.** This Modern Structure Has Replaced an Old Barn, Part of Which Can Be Seen in the Rear of the Picture. The Old Barn, Built in 1872 for Nils Hoel, Old Settler, Was Destroyed in a Recent Cyclone.

THE AMERICAN BUILDER is a great friend. I would not be without it for twice the cost.

GUSTAV EDMAN.

## A Few Nuts to Crack

To the Editor:

Topeka, Kan.

Here are two more problems for the readers of the AMERICAN BUILDER to bother their brains on of a rainy day. I have spent a little time on Mr. Goodale's problems and find some good points in them.

1. Five men, A, B, C, D and E, drive a keg of nails; A drives one-fifth of what is in the keg and one nail more; B drives one-fifth of the remainder and one nail more; C drives one-fifth of last remainder and one nail more; D drives

one-fifth of last remainder and one more; E drives one-fifth of last remainder and one more. Now what remainder in the keg was divided equally among the five men, and they drove them. How many nails in the keg? How many did each drive? How many nails in last remainder?

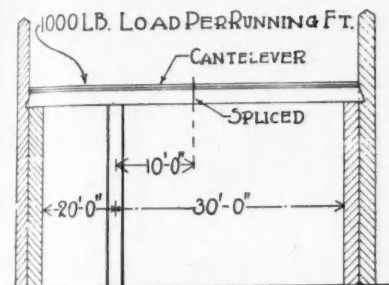
2. The length of a rafter is 2 feet longer than one-half the width of the building; the gable end contains 120 square feet. What is the width of the building? What is the length of rafter? What is the cut on the square? How do you find it?

P. W. RINEHARDT.

(P. S.—I will solve any practical problems belonging to the building trade.)

Prof. Leigh Answers Engineering Problems

To the Editor: Brooklyn, N. Y.  
I am an architectural draftsman, and am called upon frequently to figure some engineering problems. I have had some strength of materials, but never dwelt on continuous beams or splicing to a great extent.



Sketch of Girder with Uniform Load illustrating Mr. Blaustein's First Problem.

If, thru your department, some one would enlighten me as to the method of procedure in the following examples I will greatly appreciate it:  
*Example I*—It is proposed to erect a girder with a uniform load over it, the girder to be spliced and connected, one portion cantilevered 10 feet from a supported column.

How will I get the reactions and section modulus? Where is the greatest bending moment?

I have been studying the "Design of Safe Construction," by Mr. Leigh, but none of his examples are similar to the above mentioned.

The second example involves splicing two beams (girders):  
*Example II*—It is proposed to erect a theater 80 feet wide, having no columns.

To make this possible, two girders will require splicing to make up the long span. Uniform load over all.

How would you figure lower and upper splice? Is lower splice figured to take care of the entire load?

I have been a subscriber for the AMERICAN BUILDER for the past few years and find it very beneficial.

A. BLAUSTEIN.

*Answer*—In submitting an answer to these queries, it is to be understood that the beams are treated as having ends resting freely on the supports. The solution is applicable to this case only. The writer did not specify the end conditions.

EXAMPLE I

First draw the girder showing the reactions and the notation to be followed, Fig. 1. It is assumed that the splice holds the beam rigid, and therefore makes a continuous girder of it. From the theory of Strength of Materials, the bending moment over the supports is given by the formula:  
 $M_a l_1 + 2M_b (l_1 + l_2) + M_c l_2 = -\frac{1}{4} (W_1 l_1^2 + W_2 l_2^2)$  ... (1)

Where  $M_a$  = moment over support A  
 $M_b$  = moment over support B  
 $M_c$  = moment over support C

In this case  $M_a$  and  $M_c$  are zero because there is no overhang;  $l_1$  is the length of first span = 20 feet;  $l_2$  is the length of the second span = 30 feet;  $W_1$  is the uniform load per running foot on first span and  $W_2$  that on the second span. But in this case  $W_1 = W_2 = 1,000$  pounds.

Substituting these values in Equation (1):

$$2M_b (20 + 30) = -\frac{1}{4} (1,000 \times 20^2 + 1,000 \times 30^2)$$

or  $M_b = -87,500$  foot pounds.

The negative sign indicates that the beam bends downward over the support or is concave down.

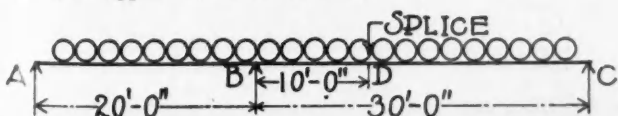


Fig. 1. Sketch of Girder Showing Reactions, Assuming the Splice Holds the Beam Rigid.

For the determination of the shear at any point the following formula is to be used:

$$V_{ab} = \frac{M_b - M_a}{l_1} + \frac{W_1 l_1}{2} \dots \dots \dots (2)$$

$V_{ab}$  represents the shear in the beam at right side of the left support of the span from A to B. The other letters are the same as before.

Substituting the values  $M_a = 0$ ,  
 $M_b = -87,500$ ,  $W_1 = 1,000$  and  $l_1 = 20$  feet, there results

$$V_{ab} = \frac{-87,500}{20} + \frac{1,000 \times 20}{2} = 5,625 \text{ pounds}$$

Between the supports at A and B there is a load of 20,000 pounds. The shear in the beam in a section just at the left side of support B is gotten by subtracting 20,000 from 5,625; or in general is  $V_{ab} - W_{ab} = 5,625 - 20,000 = -14,375$  pounds.

Writing Formula (2) for the span from B to C we have

$$V_{bc} = \frac{M_c - M_b}{l_2} + \frac{W_2 l_2}{2} \dots \dots \dots (3)$$

Where  $V_{bc}$  is the shear in the beam just to the right of support B. Here  $M_c = 0$ ,  $M_b = -87,500$ .

$W_2 = 1,000$  pounds and  $l_2 = 30$  feet.  
Substituting in Formula (3):

$$V_{bc} = \frac{87,500}{30} + \frac{1,000 \times 30}{2} = 2,917 + 15,000 = 17,917 \text{ pounds.}$$

The shear at the left of support C is  
 $17,917 - (30 \times 1,000) = -12,083$  pounds.

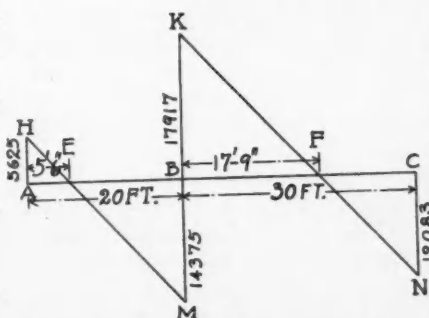


Fig. 2. Shear Diagram Using Values of Shear, Vertical Distances and Lengths of Beam as Horizontal Distances.

The shear diagram may now be plotted as shown in Fig. 2, using values of shear for vertical distances, and lengths of beam as horizontal distances. The diagram consists of straight lines, since the loads are uniform.

Now the shear lines cross the axes at E and F. The shear is zero at the points, and indicates maximum bending moments in those spans. The value of AE is found by the proportion

$$\frac{AE}{20 - AE} = \frac{5,625}{14,375}$$

$AE = 5.6$

The reaction at any support is the difference between the values of the shear at the opposite sides of the support. Since BM is negative, it becomes the algebraic difference, or if we neglect the minus sign the reaction is the sum of the two shearing forces.

If R stands for reaction, from Fig. 2:

$$R_a = A H = 5,625 \text{ pounds.}$$

$$R_b = M K = 14,375 + 17,917 = 32,292 \text{ pounds.}$$

$$R_c = 12,083 \text{ pounds.}$$

We must now calculate the bending moments at E and F as they are the greatest at these points in the span. The moment at E is the moment of  $R_a$  minus the moment of the load from A to E at the center point, or

$$M_E = 5,625 \times 5.6 - 1,000 \times 5.6 \times \frac{5.6}{2} = 15,820 \text{ foot pounds.}$$

Similarly for moment at F:

$$M_F = 12,083 \times 12.1 - 1,000 \times 12.1 \times \frac{12.1}{2} = 73,000 \text{ foot pounds}$$

The moment diagram can be sketched roughly as in Fig. 3. The figure shows the maximum bending moment at B and

equal to  $87,500 \times 12 = 1,170,000$  foot pounds.

But Bending Moment =  $16,000 \times$  Section Modulus.

$$\therefore 1,170,000 = 16,000 \times S. M.$$

Section Modulus = 73.1.

From a Cambria Handbook, a girder built up from four 5 by  $3\frac{1}{2}$  by  $\frac{3}{8}$  angle irons, and a web plate 14 by  $\frac{3}{8}$  will have a section modulus equal to 81. Therefore, such a girder could be used in this case.

Now, good practice in designing requires the splice to be as strong as any part of the girder. That is the flange splice must be of area equal to the flange of the girder to carry the maximum fibre stress at the danger section. Also, the web is designed to carry the maximum vertical shear.

The assumption is made that the flange splice carries all the bending stresses and the web splice all the vertical shear.

The flange splice is made with four 4 by 3 by  $\frac{1}{2}$ -inch angle irons, as their gross areas are as large as the 5 by  $3\frac{1}{2}$  by  $\frac{3}{8}$  angle of the girder. The two views of the splice are shown in Fig. 4.

In Fig. 5, the section of a 4 by 3 by  $\frac{1}{2}$  angle iron is shown with its center of gravity .83 inch from the back of the long leg. This point, C, is where the total tension or compression forces may be thought of as acting. Now the total height of girder from back to back angle is  $14\frac{1}{4}$  inches. Since the outside angles are  $\frac{3}{8}$  inch thick and the splice angles are set below them the distance from center of gravity of the tension and compression angle now is

$$14.25 - 2 \times \frac{3}{8} - 2 \times .83 = 11.84 \text{ inches}$$

Suppose we call it 12 inches.

Then the moment of the resisting tension and compression couple is  $12P$  and  $P$  is the total compressive or tensile force acting on the angle irons. (See side view, Fig. 4.)

But the external bending moment is equal to the resisting moment, or

$$12P = 1,170,000$$

$$P = 97,500 \text{ pounds}$$

Since the area of a 4 by 3 by  $\frac{1}{2}$  angle iron is 3.25 square inches, the total compressive area is

$$2 \times 3.25 = 6.5$$

The fibre stress per square inch is

$$S = \frac{97,500}{6.5} = 15,000 \text{ pounds}$$

Since the bending moment at the splice is much less than the above maximum value, the splice is safe in tension.

We must now figure the number of  $\frac{7}{8}$ -inch rivets to carry the load in shear and bearing. Now, the rivets connecting the two horizontal legs of the angles are in single shear. That is, there is a shearing area of  $\pi/4$  ( $\frac{7}{8}$ )<sup>2</sup> = .602 square inch. If 8,800 pounds is used as a safe shearing stress, the shearing strength of one rivet.

$$S = .602 \times 8,800 = 5,300 \text{ pounds}$$

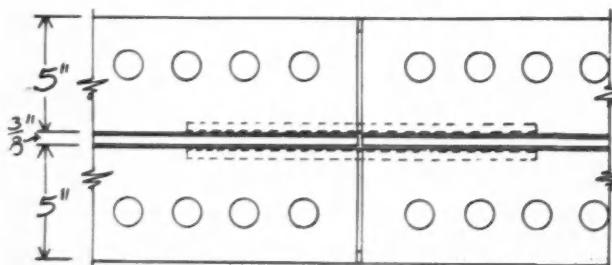


Fig. 4. Top and End View of Riveting in Splice Angles.

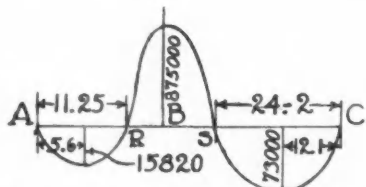


Fig. 3. Moment Diagram Showing Maximum Bending Moment at B.

Then the number of rivets  $N$  is

$$N = \frac{97,500}{5,300} = 18.4, \text{ or } 19 \text{ rivets}$$

The 5 by  $3\frac{1}{2}$  by  $\frac{3}{8}$  angle iron is thinner than the splice angle. Then the bearing strength must be figured for that angle. The bearing area of a rivet is equal to the diameter times the thickness of the plate. If 18,000 pounds is a safe bearing stress then the bearing strength of one rivet is

$$\frac{3}{8} \times \frac{7}{8} \times 18,000 = 5,900 \text{ pounds}$$

If  $m$  is the number of rivets in bearing we have

$$m = \frac{97,500}{5,900} = 16.5, \text{ or } 17 \text{ rivets}$$

Since shear requires more rivets we will use 19, or say 20 for symmetry. Now the rivets connecting the vertical legs of the iron angles are in double shear as the end view of Fig. 4 shows. Each rivet then counts for two in both shear

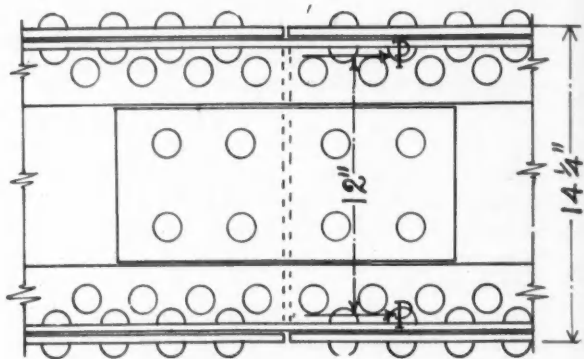


Fig. 4a. Side View of Splice.

and bearing. We will then place five rivets on each side of the web plate to rivet the horizontal legs of the angle irons and five to rivet the vertical legs. The spacing is a minimum of 3 inches and a maximum of 6 inches. This will govern the length of the splice plates. The designer could probably use rivet holes already cut for the vertical legs of the flange angles by putting in rivets long enough to include the vertical legs of the splice angles.

The maximum vertical shear to carry at any point is 17,917 pounds at  $K$  of Fig. 2. Since 8,800 pounds is a safe shearing stress, the shearing area of web plate required is

$$A = \frac{17,917}{8,800} = 2.04 \text{ square inches}$$

The space left between the vertical legs of the splice angles for a web splice plate is

$$h = 14.25 - 2 \times 3\frac{1}{2} = 7.25 \text{ inches}$$

If  $\frac{3}{8}$ -inch plates are used, one on each side, the shearing area is

$$A = 2 \times 7.25 \times \frac{3}{8} = 5.44 \text{ square inches}$$

which is seen to be large enough. Now the web rivets are in double shear. The shearing area of one rivet is

$$2 \times .602 = 1.204$$

Shearing strength is

$$S = 8,800 \times 1.204 = 10,600 \text{ pound, approx.}$$

Then the number of rivets  $n$  in shear is

$$n = \frac{17,917}{10,600} = 1.8, \text{ or } 2 \text{ rivets}$$

For bearing area, use  $d = \frac{7}{8}$  and  $t = \frac{3}{8}$ , as before. Then the bearing strength of one rivet is

$$\frac{7}{8} \times \frac{3}{8} \times 18,000 = 5,900 \text{ pounds}$$

If  $m$  is the required number

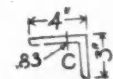
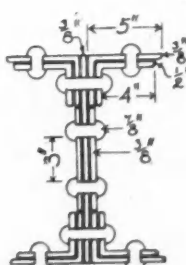
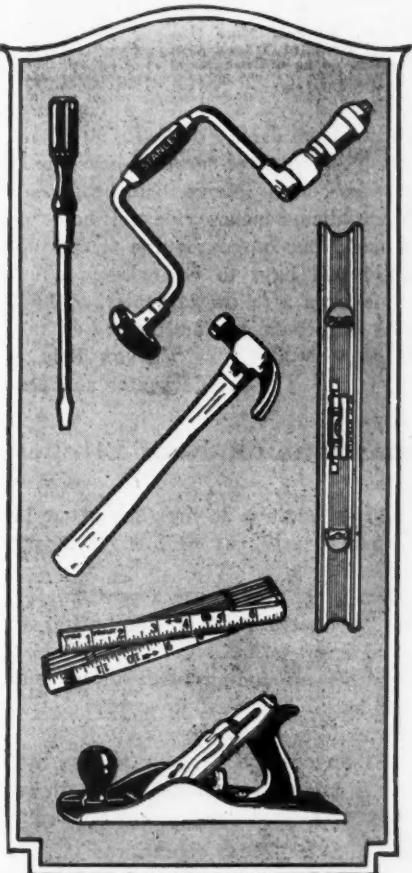
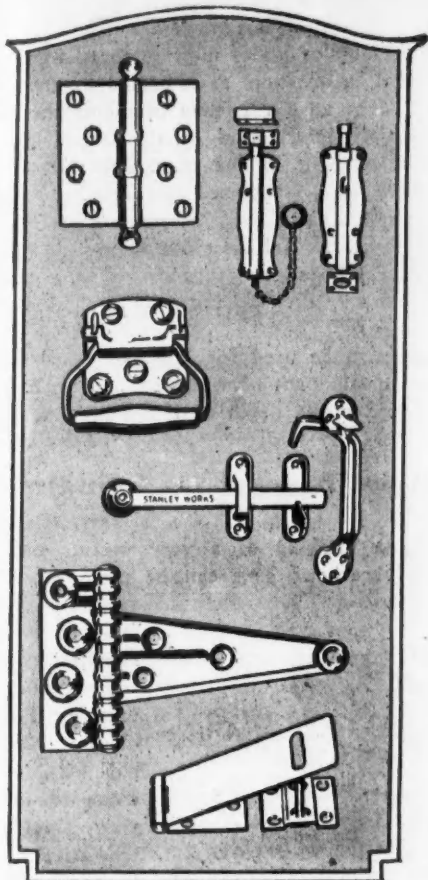


Fig. 5. Showing the Point C Where the Total Fibre Stress May Be Considered As Acting.







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$$m = \frac{17,917}{5,900} = 3+$$

We would then use four rivets at least on each side of the joint. The joint with its rivets are shown in Fig. 4.

If the height of the girder is different because of some controlling factor, the designer need only figure a new force P from the relation

$$h P = 1,170,000$$

The riveting is figured from pounds new value of P as before.

The continuous girder and splice might have been avoided by placing the 20-foot girder on the 20-foot span and the 30-foot girder on the 30-foot span.

CHARLES W. LEIGH.



### Chart Gives Capacity of Cisterns

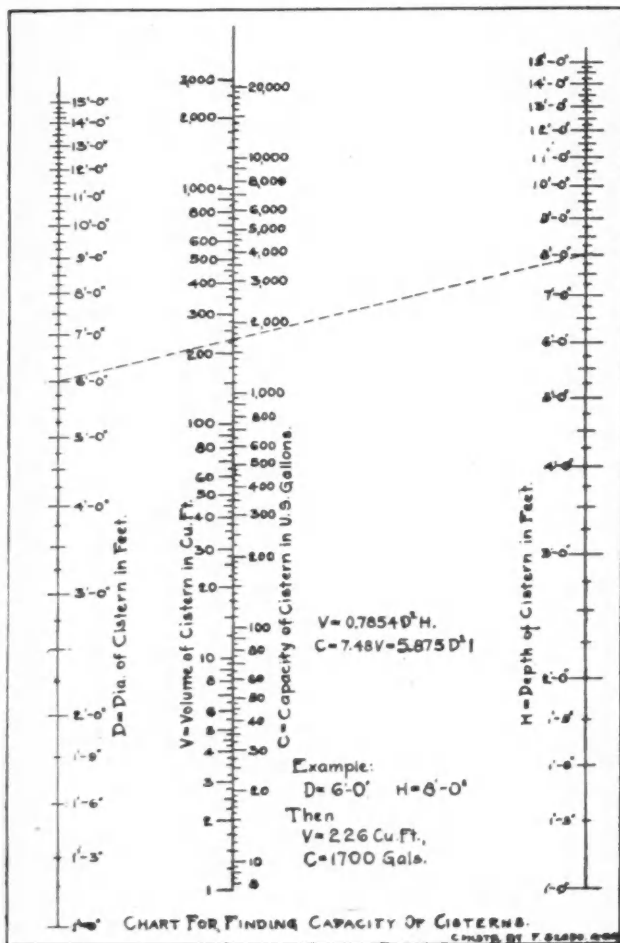
To the Editor:

Kewanee, Illinois.

In the October issue of the AMERICAN BUILDER, Mr. Holly H. Rickey asks for a table or formula for finding the capacity of cisterns. For his, as well as other readers' benefit, I have constructed the accompanying chart, which will give the volume in cubic feet, as well as the capacity in U. S. gallons, of cisterns up to 15 feet in diameter, and 15 feet deep, without calculation.

The left-hand scale shows the diameter of the cistern, the values advancing by 3 inches. The right-hand scale shows the depth of the cistern, the values also advancing 3 inches.

The answers are indicated by the middle scale, the left side of which shows the volume in cu. ft. and the right side



Unique Chart Prepared by Frank Szabo to Determine Capacity of Cisterns of Various Sizes Up to 15 Feet in Diameter and 15 Feet Deep. The Method of Reading This Chart Is Explained in His Letter Above.

shows the capacity in U. S. gallons.

To use this chart hold a straight edge or stretch a piece of sewing thread across the chart in such a manner that the intersections on the outside scales indicate the diameter and depth of the cistern in question, as indicated by the dotted line on the chart. The answer is then found on the middle scale at the point of intersection of the thread and the middle scale. The example on the chart illustrates this.

Inasmuch as there is no recognized standard for the number of gallons per liquid barrel, this information has not been incorporated on the chart. But the old method is to consider 31½ gallons per barrel, and the capacity of the cistern in barrels may be found by dividing the gallons obtained from the chart by 31.5.

This chart may also be used for tanks or reservoirs, or for finding the actual amount of water or fluid in a cistern or tank when diameter and depth of liquid are known.

FRANZ SZABO.

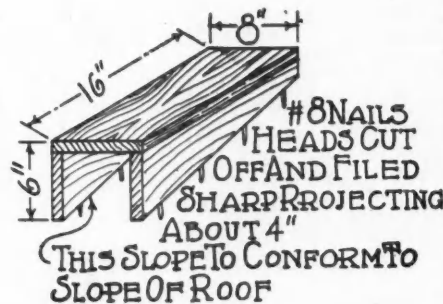


### Handy Roof Bracket for Shingling

To the Editor:

Mercer, Missouri.

I am enclosing a drawing of a very useful homemade shingling or roof bracket. This can be used either as a



Vernon Bell, Builder, Mercer, Mo., Has Designed a Handy Roof Bracket Which Can Be Used Either as a Seat or as a Receptacle to Hold Nails.

seat or as a receptacle to hold the shingles. For instance, when finishing the side of a roof you have no sheathing cracks to stick your shingles in. The top or seat board is about 16 inches long. Take another board and saw it diagonally so that the slope will correspond to

the slope of the roof. Then drive 3 or 4 No. 8-penny nails at right angles to the top of this three-cornered board and file off the heads and file them sharp, letting them project about ¼ inch. The top board is about 8 inches wide and the other board is about 6 inches wide, but of course the steeper the roof the wider the board will have to be, or they will be too short. I learned this from a fellow carpenter, so I will pass it on so it may be of benefit to someone else.

VERNON BELL,  
Carpenter and Builder.



### Some Questions on Roof Pitches

To the Editor:

Ada, Okla.

I am going to add an addition to my shop about 12 by 36 feet, two stories, with nearly flat roof covered with slate surfaced roofing (four-ply).

Would 1 foot pitch in 12 feet insure a good roof? What would be the least safe pitch for a 12-foot rafter (2 by 4 inches) with this roofing?

My foundation is cement footing with three courses of brick above ground and I have left no openings for air to circulate thru under building—now the ground is well-drained and a side hill grade so to speak. Kindly tell me if there is any need of openings in this foundation. The joists are in the clear of the dirt, of course.

R. C. BISHOP.



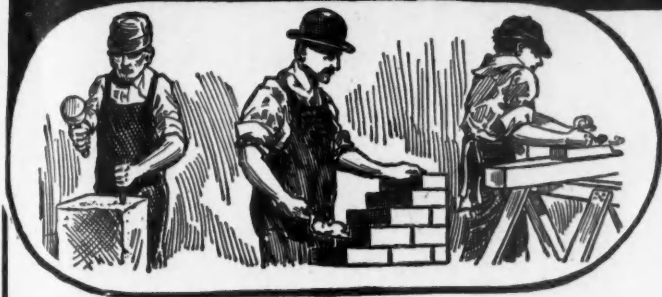
### Something of Interest to Architects

To the Editor:

West Raleigh, N. C.

I enclose a few photographs of model houses built of stone

# What Is Your Job?



**ARE** you the man who is bossed—are you doing the hard work while some other man gets the high pay for telling you what to do? Why not be the boss yourself? The only difference between you and the men higher up is in what they know that you don't know. They get their big pay and have the easy work because they know how to direct you and other work-

men. If you could read blue prints, estimate on work, know how to direct construction, you too would be in the big pay class. Read below how you can get this knowledge and be a bigger man in your line.

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#### CONSTRUCTION

**Brickwork:** Footings and foundation walls of brick, concrete and stone. Brick laying, joints in brick work, pointing, tuck pointing, etc. Brick and stone arches. Use of different kinds of stone.

**Carpentry:** Kinds and uses of woods, cornices, interior details, framing, roof construction, bridging, miter joints, butt joints, etc. How plans are made. Complete instructions illustrated by working blue prints. Plans and specifications. Residences, apartment buildings, factory buildings, school houses, hospitals, store and office buildings, bank buildings.

#### ESTIMATING

Practical rules. Problems worked out from the plans. Brickwork and carpentry. Excavations. Labor and material for footings in brick, concrete and rubble stone. Methods of practical builders. Re-inforced concrete—full plans and specifications for re-inforced concrete buildings. Estimates of labor and material required. Labor and material for brick work; figuring common and pressed brick walls of different thicknesses, etc. Chimneys, fire places and cisterns. Fire-proofing, tile flooring, arches, partitions, furring, terra cotta, etc. Lumber and timber; figuring board feet. Estimating posts, girders, sills, joints, studs, bridging, rafters, etc. Estimating all kinds of roofs, floors, siding, cornices, etc. Labor for rough and finished carpentry.

Estimating mill work. Labor and material for window and door frames, sash, blinds, base board, wainscoting and all kinds of closets, cupboards, etc. Lathing and plastering, sheet metal work, exterior and interior marble jointing and decorating, glazing, plumbing, heating, wiring, etc.

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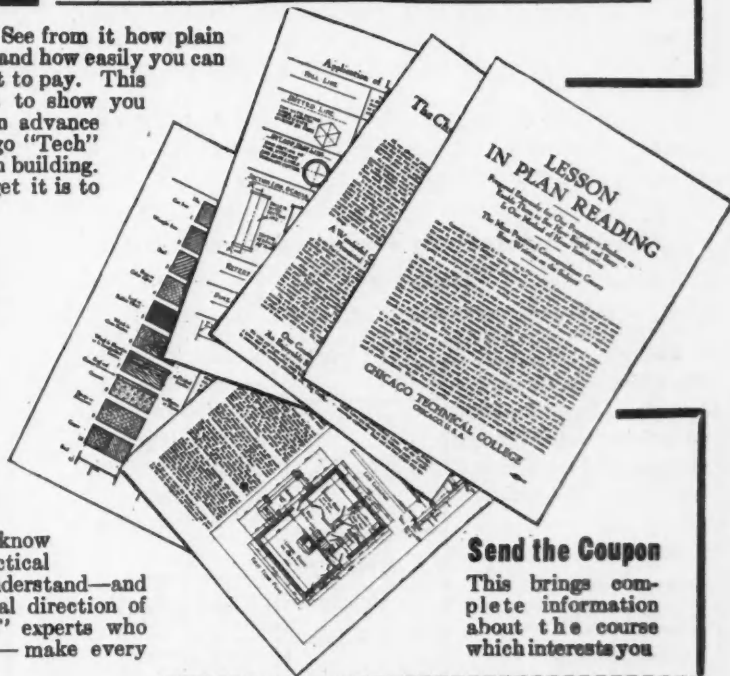
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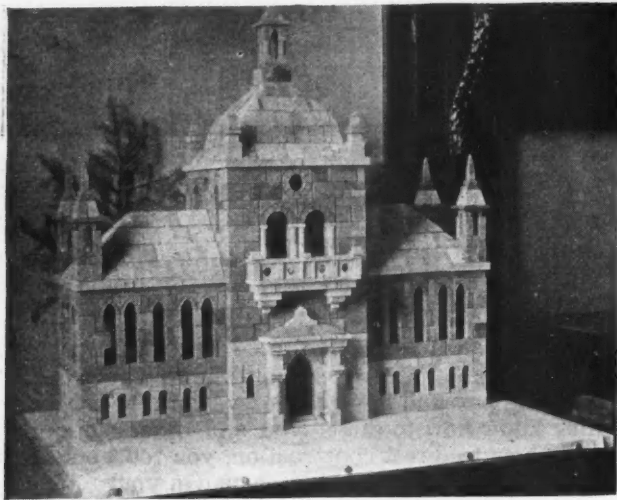
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Unique Scheme of Erecting Model Buildings Out of Small Stones, Designed by W. J. Dana, West Raleigh, N. C. It Is More Flexible Than the Cardboard Method.

blocks. I make these model buildings as an amusement during odd hours. Could you put me in touch with some architect or others who could use such photographs of proposed buildings and would pay for them?

This method is not quick but it gives a very comprehensive method of determining whether a building is correctly proportioned and is more flexible than using cardboard models.



WM. JAY DANA.

**Wants to Start Furniture Shop**

To the Editor:

Hancock, Mich.

I would like to know if any of the AMERICAN BUILDER readers are making success with a first-class furniture repair, varnishing and polishing shop, in a city about 15,000 in population, and what would be the necessary equipment and size of the shop?

I am thinking of starting one to keep busy during the dull winter times and would like very much to get information from readers regarding it.

SAM R, ALA.



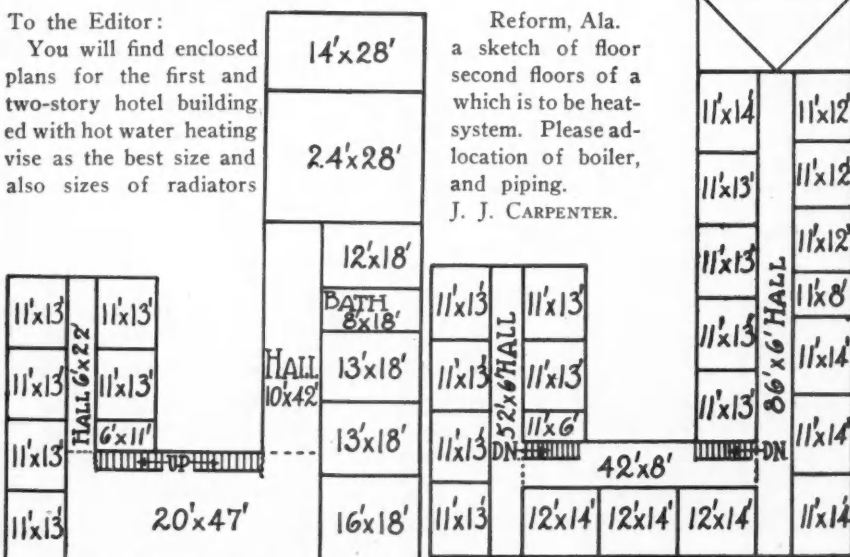
**Seeks Advice on Heating Plant for Small Hotel**

To the Editor:

You will find enclosed plans for the first and two-story hotel building with hot water heating vise as the best size and also sizes of radiators

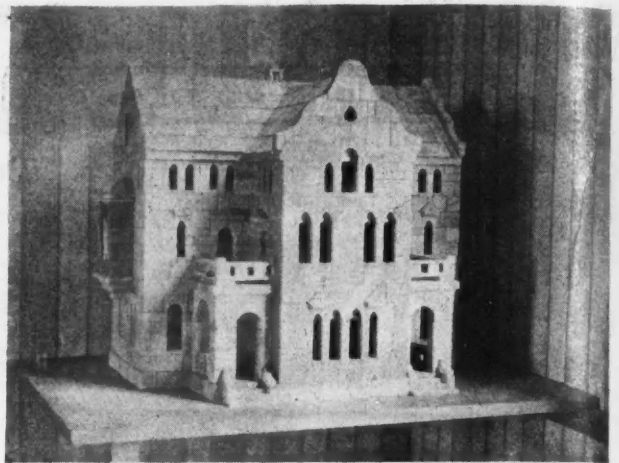
Reform, Ala. a sketch of floor second floors of a which is to be heat-system. Please ad-location of boiler, and piping.

J. J. CARPENTER.



FIRST FLOOR PLAN SECOND FLOOR PLAN

J. J. Carpenter Has a Hotel Heating Problem for Some of His Brother Readers. The Plans Shown Here Are for the First and Second Floors of the Hotel to Be Heated. Where Shall He Place the Heating Plant?



Another One of the Model Stone Buildings Erected Out of Small Stone. Architects Can Use This Method to Determine Correct Proportions.

**What Is Strength of Wall?**

To the Editor:

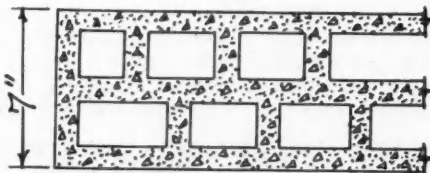
Stockton, Calif.

I would like to know the supporting strength of a wall 10 feet high laid up out of concrete block (or tile).

Tile is to be laid up so as to represent three 1-inch walls with an outside dimension of 7 inches.

These three walls will be tied with 1-inch webs about 4 inches apart.

The cross webs, however, cannot be



CONCRETE BLOCK

How Strong Will This Wall Be?—Is the Question That Is Troubling Frederick W. Rieke. This Is Applied Either to Concrete Block or Tile.

depended on to carry much weight on account of not coming directly above each other every time.

I am enclosing a small sketch which will give you an idea of what I have tried to explain.

FREDERICK W. RIEKE.



**Wants Designs for Furniture**

To the Editor:

Denver, Colo.

Will you kindly advise me where I may secure a few designs of mission and other furniture?

U. S. SEIRER.



**Wants Copy of Lightning Calculator**

To the Editor:

Sioux City, Iowa.

I noticed in the last issue of the AMERICAN BUILDER that Mr. O. M. Southworth told Mr. Rickey how to find the capacity of a round cistern. Mr. Southworth says he discovered it some years ago in Davis' lightning calculator. Can you tell me where I can buy Davis' lightning calculator or some other book that will help me to figure different work out? I am working at cement work.

CHRIST JENSEN.



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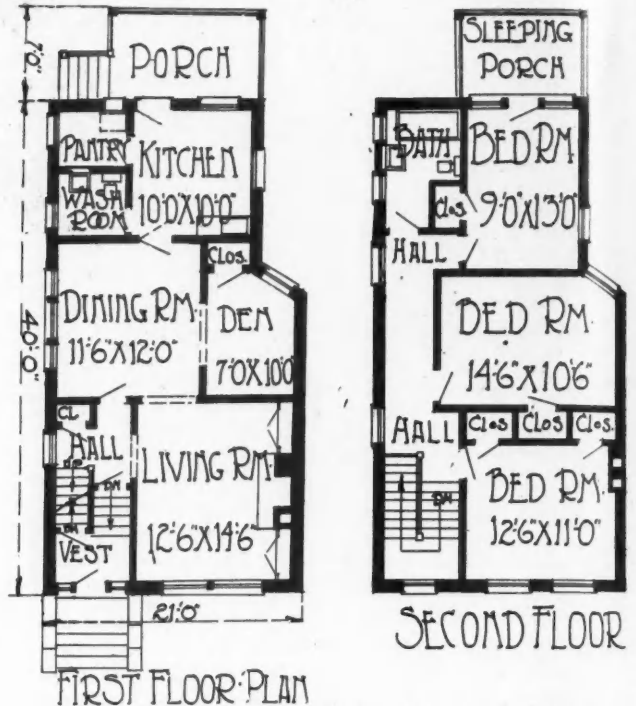
## Attractive Brick Home of Unusual Design

TWO-STORY RESIDENCE HAS OUTWARD APPEARANCE OF APARTMENT BUILDING BUILT OF SOLID BRICK AND CONTAINS SEVEN ROOMS

FOR those seeking something unusual in design, the attractive, solid brick home shown here with floor plans should prove interesting. To all outward appearances, it is a substantial two apartment building. The front entrance is very pleasing with its hood of ornamental tile, stone steps and brick balustrades. A solid brick wall along the walk supports the terrace. The basement is high and well lighted.

On the first floor are the living quarters, consisting of living room, 12 feet 6 inches by 14 feet 6 inches, a very comfortable and bright room with fireplace and wall bookcases, dining room, slightly smaller with a triple window providing light, a small den with clothes closet, and kitchen 10 by 10 feet. There is also a washroom adjoining the kitchen. It is fitted with washing machine and ironing equipment.

Three bedrooms are located on the upper floor. As the house is rather narrow these rooms are placed one after another so as to be large and comfortable. The front bedroom is 12 by 11 feet, the center one 14 feet



First and Second Floor Plans of Residence Described Here. Note the Arrangement of the Bedrooms on the Second Floor.

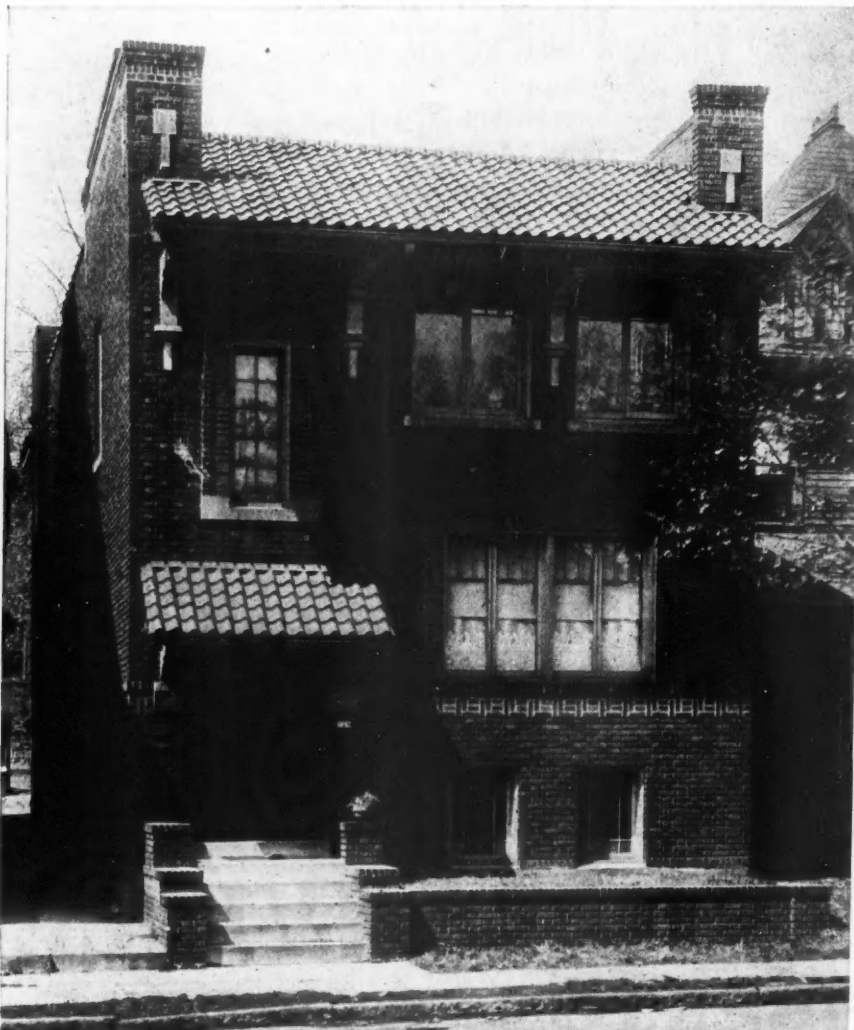
6 inches by 10 feet 6 inches and the rear bedroom 9 by 13 feet. At the rear of the second floor is a sleeping porch.

The house is not as wide as the usual city home, being 21 feet in width, but it is built this size in order to gain plenty of window space on both sides. It is 40 feet long.

While this house is unusual in design, it is very attractive and will appeal to those who want something different and still want a home in preference to an apartment. The brick construction insures a certain dignity and permanency, while the compact arrangement eliminates much of the work which is usually required in a residence. It suggests to the builder one of the many variations in style which are available.

### Road Material and Equipment Show

MORE than one-half million dollars worth of machinery will be on display at the exhibition of road materials and equipment to be held at the Coliseum, Chicago, on Feb. 9, 10, 11 and 12.



Looks Like a Two-Apartment Building. Doesn't It? But It Is Not. It Is Unique Design for a Residence, 21 by 40 Feet. There Are Seven Rooms, Four on the Lower Floor and Three Upstairs. The Building Is of Solid Brick Construction Thruout.





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 How many hours' time is required to fix it?  
 How is a window frame set in a brick wall?  
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The second edition contains complete estimating tables so that the number of brick, amount of material for mortar of any mixture, hours of bricklayers' and laborers' time may be read off for any thickness and area of wall up to 10,000 square feet laid in any bond.

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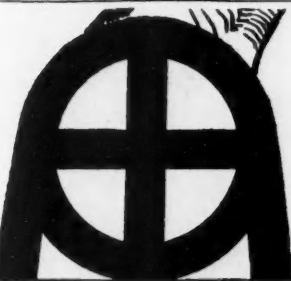
Gentlemen:—Please send me "Brick, How to Build and Estimate", as offered in the February issue of the American Builder. Enclosed find 25 cents in stamps.

We are planning on erecting:

.....

.....

Name Business City State



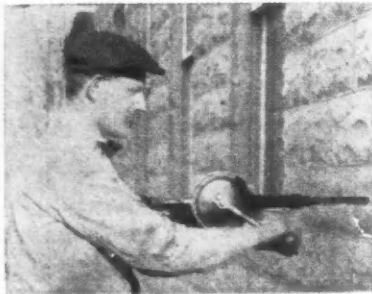
**LOOK FOR THIS MARK ON EVERY BRICK**

## Expansion and Toggle Bolts Solve Builders' Problems

BUILDERS FIND BOLTS PREVENT WALL DAMAGE AND HOLD HEAVY LOADS PERMANENTLY

**"T**O hold or not to hold"—that is the question that bothers a contractor when he has to install some fitting in a wall. Nails, spikes, wooden wedges, screws do not give the grip necessary to hold the fitting permanently. Moreover they cause the material in the wall to crumble and make a gaping hole.

Fortunately for him, however, this problem is no longer difficult, for the advent of expansion bolts or shells, as they are often called, and toggle bolts has eliminated the old trouble and greatly increased the satisfaction of his clients.



Drilling the Hole in Concrete Block Wall for Insertion of Expansion Bolt.

wing nut carrying the toggle, and the toggle. The bolt is usually a stove bolt of suitable dimensions and shape, made either ornamental, countersunk or round head, as required. The wing nut is a small flat piece of punched steel threaded to fit the bolt with short projections or wings on opposite sides which act as hinging pivots for the toggle.

The toggle may be described as wings which fold in position against the bolt or parallel with the bolt and automatically spring open or spread to a fixed position after the bolt has been passed thru a small drilled hole in the plaster of the ceiling or wall and the wings or toggles are allowed clearance in the open space beyond, to spread to a bracing position at right angles to the bolt.

Toggle bolts are indispensable in making secure fastenings to all kinds of hollow walls, ceilings or floors. Where hollow tile, brick, hollow cement blocks and other forms of fireproof construction are used, the shell is often too thin or brittle to permit a successful fastening by means of expansion bolts or screw anchors. This condition also occurs in plaster or cement walls separated from the solid wall by means

The uses of these two articles in the construction or repair of a building, either office or home, cover a wide range of advantages to the homeowner and the builder.

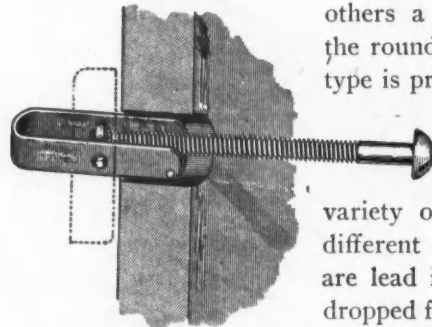
The toggle bolt is in three principal parts, the bolt, the

of furring where a hollow space is left behind the finished surface, likewise in tile or cement bath room walls.

The chief requisite of a toggle bolt is that it has sufficient strength to support the required load, at the same time the toggle should be small enough to pass thru a hole of minimum size.

Some forms of construction require a threaded nut at the outside of the work for tightening up. In

others a finished head of the round or flat stove bolt type is preferred.



Type of Toggle Bolt Used Extensively for Fastening Fixtures, Etc., to Plaster Surfaces.

Expansion shells appear on the market in a variety of types made of different materials. There are lead inserts, cast steel, dropped forged and pressed steel expansion shells.

These shells or inserts are so constructed that when entered into a drilled hole in hard material such as concrete, slate, marble, brick or stone, the insert expands to a gripping or wedging position as the bolt or machine screw is drawn up.

The old method employed to fasten an object to a wall, ceiling or floor composed of a rock-like substance was to either drill a large hole and insert a wooden plug for a lag screw or wedge or babbitt a bolt into position.

The expansion shell calls for less drilling or displacement of the material carrying the bolt, and the inserts fitting the drilled hole snug and flush make a neater finished job and afford a gripping or fastening strength



Inserting the Expansion Shell. This Little Device Is Very Valuable to Builders for Fastening Accessories of All Kinds on Walls.

far beyond a wooden plug subject to shrinkage or a soft babbitt filler.

An expansion shell imbedded in stone to approximately eight diameters of a 3/4-inch bolt, by actual test, has a holding



The Bracket in Place. The Workman Is Now Tightening Up the Expansion Bolt. Each Turn of the Bolt Spreads the Interior Shell and Increases Its Grip on the Wall.



## What BOSTWICK "Truss-Loop" Metal Lath Saves You, Mr. Contractor —

**T**HE contractor who uses Bostwick "Truss-Loop" Metal Lath gives the owner safety, permanence, wall beauty and fire protection—all real, appreciable values. The contractor himself profits through five worth-while savings:

1. **Lath** ..... A saving in yardage of Metal Lath owing to nesting ribs for lapping along the edge of each sheet of Bostwick "Truss-Loop" Metal Lath, as compared to overlapping of other types.
2. **Time** ..... No time is lost in stretching when Bostwick "Truss-Loop" Metal Lath is applied, as its rigidity insures its retaining the original form of an absolute true oblong. Size—13½x96, 16½x80 or 24x96".
3. **Studding** "Truss-Loop" permits wider spacing of studding or joists—12", 16", 20" or 24" on centers, thereby lessening the cost of construction.
4. **Labor** ..... No re-troweling by the plasterer to fill up low places, there being no deflection on account of the rigidity of the lath; and the scratch and brown coats can be applied without change or removal of scaffold.
5. **Plaster** ..... Here you effect a decided saving in that you avoid a waste of plaster because with "Truss-Loop" no excess plaster is troweled thru to drop back of the wall for there can be troweled thru only a sufficient amount to insure a permanent key.

The full story of Bostwick "Truss-Loop" Metal Lath is told in the Bostwick Catalog—a copy of which will be sent on request

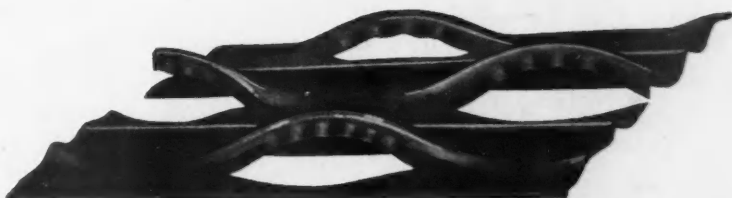
**The Bostwick Steel Lath Company**  
NILES, OHIO

**The Bostwick Line Includes:**

- Bostwick "Truss-Loop" Metal Lath
- Bostwick Expanded Metal Lath
- Bostwick "Truss-V-Rib"
- Corner Bead
- Base Bead
- Wall Plugs
- Wall Ties
- Channel Iron
- Heavy Expanded Metal
- Light Concrete Re-inforcements

# Bostwick

TRUSS-LOOP  
METAL LATH



"Truss-Loop" Metal Lath, just like an arched bridge, derives its strength from a great number of small trusses



power beyond the tensile strength of the bolt. This condition is also true of the shells holding bolts of smaller or greater dimensions.

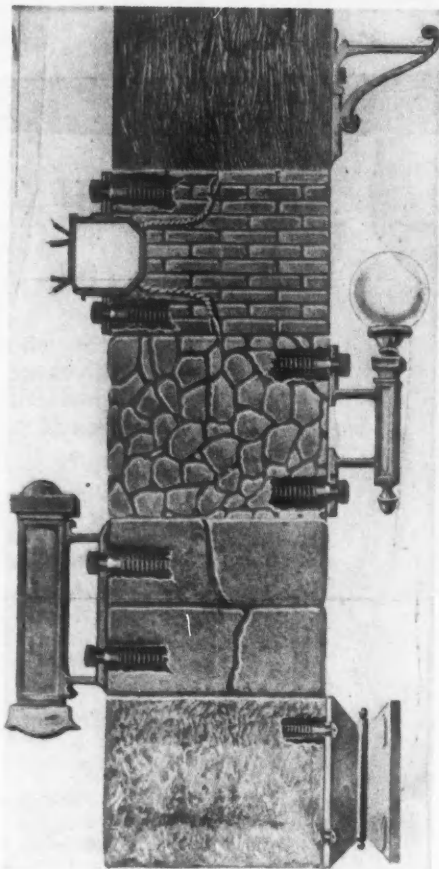
Expansion shells are used to fasten heavy equipment such as machine housings and base plates to wall or floors, and, in fact, make undoubtedly the best attaching device by reason of permanency in holding power and expediency in installing of any method of attachment as yet developed in the building trade.

Pipe work, plumbing fixtures, switchboard installations, machine housings, railing posts, ornamental fixtures, soda fountain equipment, signs, etc., all call for the use of the expansion shell device. The expansion shell, in fact, covers the entire field for attaching any moderate size object to a solid material of stony substance.

The toggle bolt in the home for a means of fastening objects to a plaster surface—the expansion shell for the same duty in walls, ceilings or floors of hard substance—they are sure, secure and safe.

The size of a bolt is always understood to be the diameter of the iron of which it is made, not of the expansion parts. The double expansion bolt is best for fastening into brick or masonry as it gives a parallel expansion.

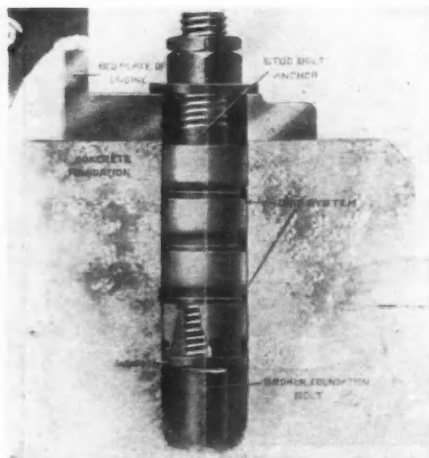
All that is required for the installation of a bolt is a hole not larger at the bottom than at the top, of sufficient size and depth to insert the expansion nut and cases. The article to be fastened is then put in place, the bolt inserted and by turning the head as with a common bolt, the nut is drawn towards the



Composite Diagram, Showing How Expansion Shells Are Used in All Types of Material, Wood, Brick, Stone, Cobblestone, and Concrete.

head of the bolt, thus opening the cases and causing them to bind in the strongest manner. Any strain on the bolt only tends to expand the cases more, and the greater the tension the firmer the bolt will hold. ❖

ASK US, ask us, if you want information.



Anchor Bolt Used to Fasten Machinery to Concrete Floor. These Bolts Are Valuable in Cases of Excessive Vibration.

### Lumber Company in Business 170 Years

ESTABLISHED 25 years before the signing of the Declaration of Independence, the R. A. and J. J. Williams Lumber Company, of Philadelphia, Pa., is completing its 170th year in business.

This historic company, started in 1751, was a leader in Philadelphia's early trading days, at various times importing and exporting record cargoes. In 1908 the entire plant was destroyed by fire. It was rebuilt at once and quickly regained its old prestige.

❖

### Market for Lumber in Greece

AN order for a supply of window frames and doors for houses amounting to \$500,000 has been closed with the Greek government by an American firm, according to the Bureau of Foreign and Domestic Commerce.

A limited market for southern pitch pine and hardwood, due to the destruction of Greek forests, is observable in Greece. Before its entry into the war considerable quantities of lumber were furnished the country from Roumania, Austria, and Scandinavia. This traffic, which ceased entirely during the war because of difficulties in transportation, is now being gradually resumed.

This district offers a market for all woods employed in the construction of small water craft, railways, interior decoration, and flooring of dwellings and the manufacture of furniture.

❖

### \$15,000 in Prizes for "Own Your Home" Exposition

FIFTEEN THOUSAND DOLLARS has been offered in prizes for the best plans for small houses by the third annual "Own Your Home" exposition to be held in New York April 16-30.

❖

**LUMBER DEALERS**—How are you boosting your business in your town? Are you helping the "home building" campaign? Remember! your ideas may help some dealer in another section of the country. Send us pictures of your plant and the layout of your yard. Tell your story thru the AMERICAN BUILDER. Pass the good thing along—it helps the business.



## Weatherproofing Products of Quality

Ruberoid Weatherproofing Products play an important part in the construction of residences. This is made inevitable by the fundamental purposes which they serve, coupled with the great confidence reposed in them by architects and owners.

As you draw up specifications remember, that from cellar to ridgepole, there are many places in which weatherproofing products bearing the name Ruberoid should be used.

Ruberoid Weatherproofing Products have been manufactured for nearly forty years to meet a standard of quality complying with a policy which demands that the name Ruberoid appear only on products of the highest possible type. Ruberoid quality has accordingly become the standard by which weatherproofing products may be judged.

Due to the broad distribution of Ruberoid Weatherproofing Products among dealers in builders supplies it is a simple matter for builders and carpenters to meet the requirements of specifications which call for them.

Full descriptive matter and specifications for any Ruberoid Product will be sent architects on request.

### THE STANDARD PAINT COMPANY

95 Madison Avenue, New York

Chicago

Boston



*This sketch illustrates the way in which a few of the Ruberoid Weatherproofing Products are used.*

1. Ruberoid Unit Shingles insure an artistic and durable roof.
2. Ruberoid Roll Roofing, the pioneer of prepared roofings, is built to stand up under the severest conditions.
3. Ruberoid Insulating and Building Papers insure complete and permanent protection from heat, cold and dampness.
4. Ruberoid Cement Waterproofing, as an integral part of stucco, permanently prevents hair cracking.
5. Ruberoid Plastic around roof and chimney joints renders them permanently watertight.

# RU-BER-OID weatherproofing PRODUCTS

SHINGLES  
FELTS

ROLL ROOFINGS  
PAINTS



BUILT-UP ROOFS  
VARNISHES

BUILDING PAPERS  
PLASTICS

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



**EDITOR'S NOTE:** The American Builder does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address American Builder Information Exchange, 1827 Prairie Ave., Chicago.

### New Type Outlet Permits Shifting of Electrical Fixtures

**M**ANY builders and contractors have become interested in a recent invention that makes possible the utmost flexibility in lighting.

With this new device, electric lighting fixtures will no longer be fixed, but may be shifted from place to place as quickly and easily as pictures. And it eliminates for all time the nuisance and unsightliness of soldered wires and unfinished electrical connections.

Hugh White, vice-president of the Fuller Construction Co., of New York City, says about the new arrangement:

"It is certainly very practical and convenient for all kinds of structures.

"It gives the owner or tenant control of his fixtures, their placement and general use. And it makes available artistic



Wall Bracket About to Be Installed in New Wall Outlet Placed at Intervals Around the House. These Small Outlets Permit the Fixtures to Be Moved at Will Without Wall Damage and Extra Expense.

uses not possible with the present method, as fixtures may be moved at will to obtain the most pleasing results.

"In office buildings, where partitions are often changed to meet the needs and desires of old or new tenants, this new method is ideal, being economical and lending itself to groupings independent of partitions and walls. Outlets can be provided sufficient in number to meet every requirement.

"The time saving, possible in the use of this device, will mean a tremendous item of costs eliminated in the aggregate. Decidedly, this new invention is well worth while."

The essentials of the new device are a new kind of outlet and a new type plug, with curved blades instead of the familiar straight ones.

The new wall outlet looks much like the ordinary base-



Same Flexible Outlet Designed for Ceiling Fixtures. The Fixtures Are Attached by Means of Two Prongs Which Provide the Contact.

board plate. The center is a rounded triangle, containing the contact slots. The ceiling outlet is covered by a small brass plate, which sits flush with the surface.

When a building is wired, these outlets are situated at the various places where lights may possibly be used. The work of the electrician ends here. He need never be called in whenever it is necessary to shift a fixture or two.

With the installation of the outlets, inspectors and underwriters may pass on the wiring, even if none of the fixtures are in place or even selected by the tenant. The receptacles are small, inconspicuous when in place, and will not interfere with the harmony of any decorative effect.

The new plug is attached to the fixture. This is pushed into the outlet like plugging in a percolator. The curved blades point upwards, making the electrical and mechanical connections at the same time. The plug cannot possibly drop out of the receptacle, and is strong enough to hold the heaviest fixture.

The ceiling plug is made in two sections so one part may be inserted in the receptacle at a time. The blades curve in opposite directions like the prongs of an anchor. The chandelier is hung on a hook on the lower end of the plug. The harder the pull, the more firmly the fixture is held.

SHO PREVE  
AND CEN  
DO SWING  
TO REVEA  
POSITIO





# WAGNER

## Cloztitle Hanger No. 58 for Sliding-Folding Doors

### Open Easy the Year 'Round

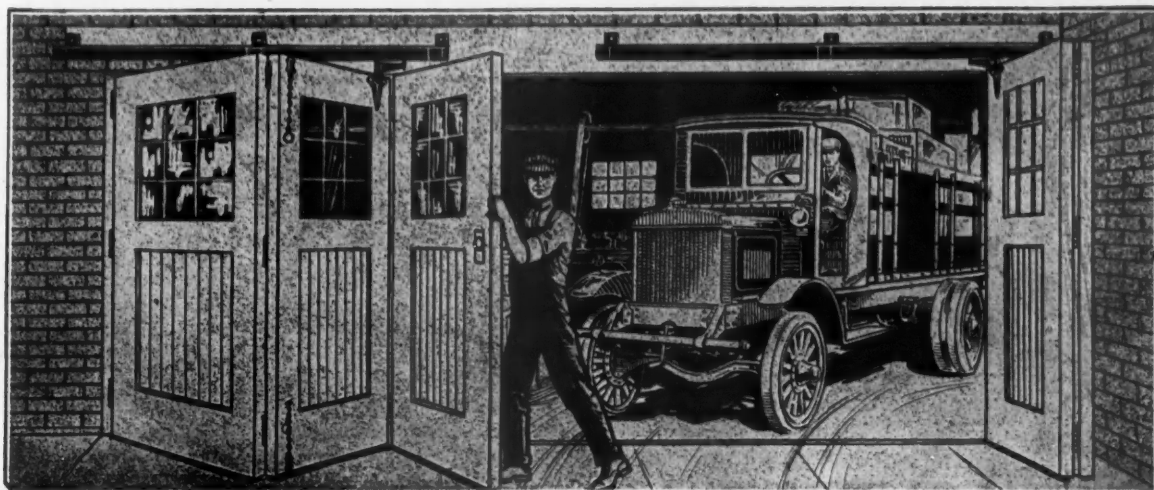
Winter's ice or summer's rains can't stop easy opening of doors equipped with Wagner Cloztitle Hangers. Light push opens them, little pull closes them—they're *always weather proof*.

Doors positively can't sag—when closed they fit into jamb as tight as one door. Part or all of opening may be used. Wagner Cloztitle Hanger is simpler, stronger, easier to attach—for 2, 3, 4, 5 or 6 door combinations. Ask for catalog.

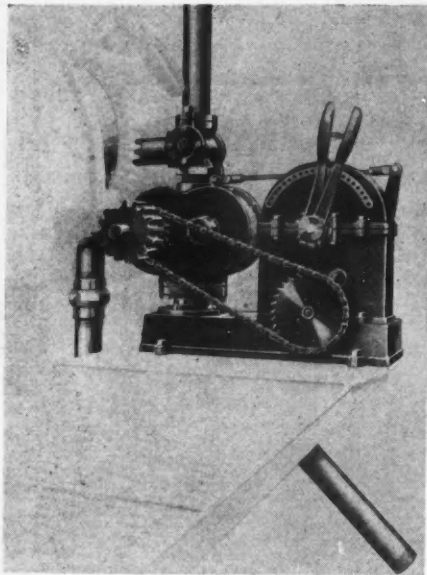
*No. 1558 Garage Door Set contains everything necessary for 3 door opening, 8 to 10 ft. Economical way—you've got all, and no more than needed.*



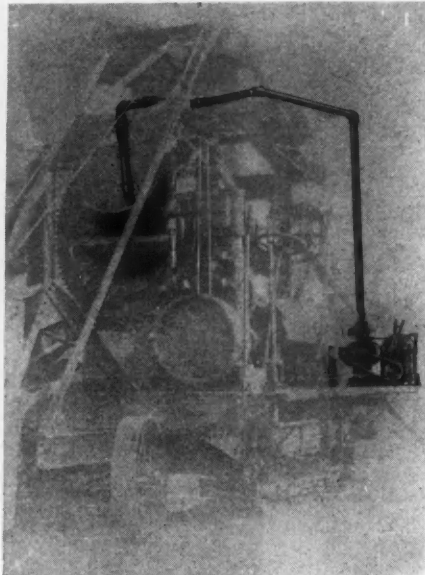
**WAGNER MFG. COMPANY**  
CEDAR FALLS, IOWA



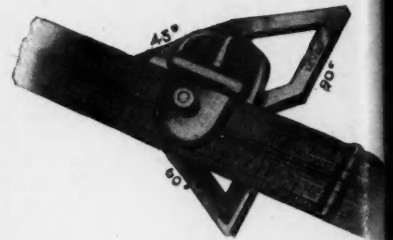
WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



Automatic Meter Pump for Measuring Water Discharged into Concrete Mixers and Paving Machines. The Pin Is Set for the Exact Amount of Water Required and the Meter Takes Care of the Rest.



View of Meter Pump in Operation on Paving Mixer (Phantom View). This Device Consists of Pump, Valve, Timer. The Pump Is Driven from the Mixer Shaft, and Can Lift Water About Twelve Feet.



Fitted to Straight Rule for Various Uses Such as T-Square, Try-Square, Etc.

inconvenience caused by this condition a practical mechanic has invented a device to serve the same purpose as several tools. It is now being manufactured.

With an ordinary common rule or straightedge, this device will serve as a T-square, try-square, miter-square, center-square, inside square, depth gauge, scratch gauge and gauge for transferring measurements. It can form a bevel or any angle, even without knowing what the degree is, find centers, diameters, radii and tangents of any circle.

### New Automatic Meter Pump for Concrete Mixers

CONSIDERABLE interest is being manifested in a detailed report just published on a series of tests recently undergone by a new automatic meter-pump.

This novel device, as its name implies, measures the water discharged into concrete mixers and paving machines. It insures a uniformly accurate quantity for each batch.

Simplicity is its main characteristic—it is simple in both construction and operation. Setting a pin for the exact quantity of water required takes but a moment, and then no more attention is required until the job is done, except, possibly, to move the pin a hole or two to offset any variations likely to occur in the moisture of the ingredients.

The device consists of a pump, a valve, a timer, and a few pipes and fittings. The pump is driven from the mixer-shaft. It works continuously. It can lift water approximately 12 feet from dead water to pump or take water from hydrant.

The two-way valve is opened and closed by means of a cam on the timer controlled by the starting lever. When the valve is open the water is discharged into the mixer; when closed, it circulates thru a return loop in the pipe.

The operator opens the valve by throwing the starting lever over to the timing pin. Then he forgets it until the next batch is ready for water. The valve closes itself automatically at the precise moment the pre-determined quantity of water has been discharged.

Throwing the starting lever is the work of an instant. It does not interfere in any way with the operator's regular duties. The total weight does not exceed 200 pounds.



### New Device Substitutes for Several Tools

MECHANICS find it necessary to carry a whole kit full of large, heavy and often clumsy tools to each job because of the work which must be done. In an effort to eliminate much of the



Used as a Scratch Gauge. Only One of Many Uses.

When adjusted this little tool holds the engaged member rigid without defacing the rule and attaches to any width or thickness up to the standard. It is so small that it can be carried conveniently in the vest pocket. In the illustrations some of the practical uses to which it can be put are shown, such as scratch gauge and plumb gauge. Some of the lines and angles made by one rule setting with this device are also shown.



A MAN struck a match to see whether the gasoline tank of his auto was empty. It wasn't.

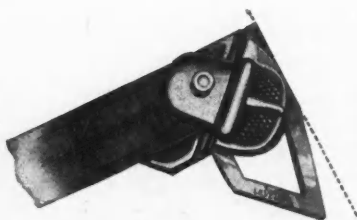
A man patted a strange dog on the head to see whether the critter was affectionate. It wasn't.

A man speeded up to see whether he could beat the train to the crossing. He couldn't.

A man cut out his advertising to see whether he could save money. He didn't.—Covington Record, Okla.



Few of the Lines and Angles Made by One Rule Setting with Tool.



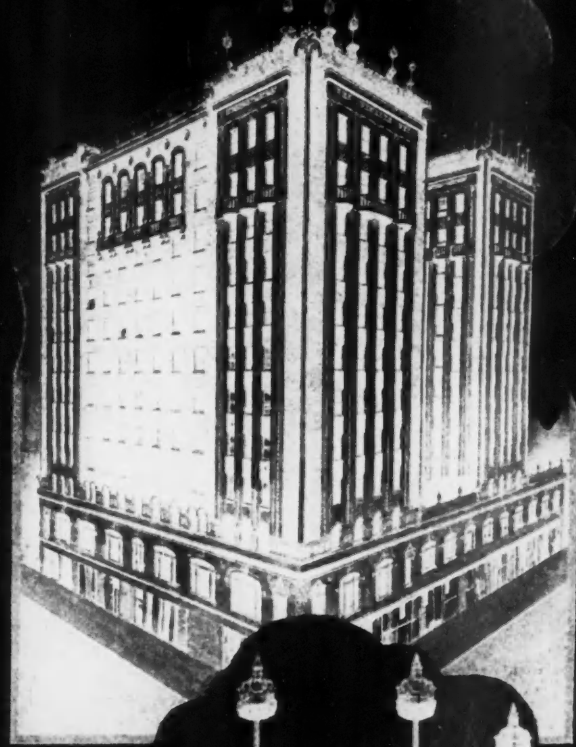
Unique Mechanic's Tool Used as a Plumb Gauge.

February, 1917

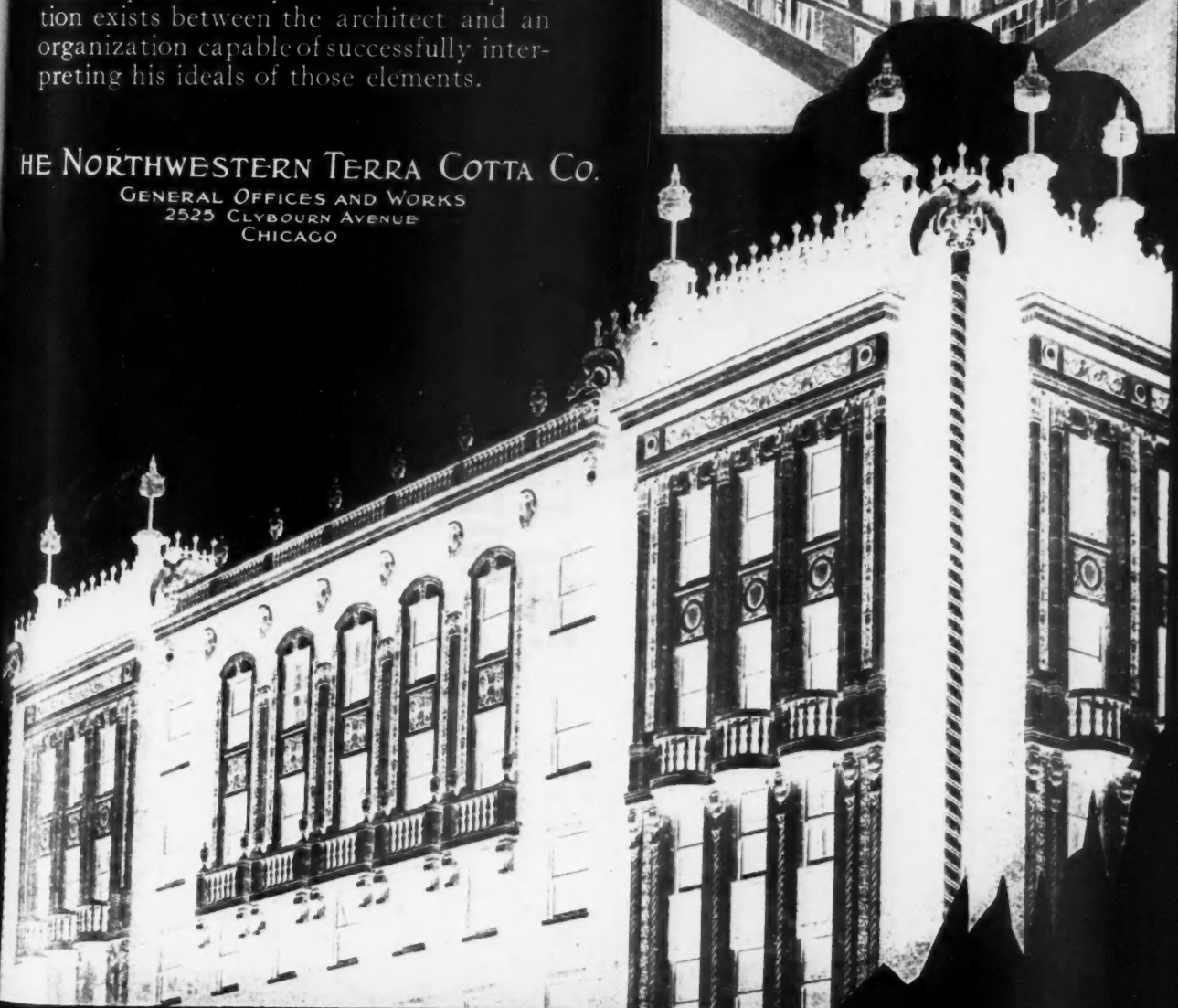
IN the Sheridan-Plaza Hotel, Sheridan Road at Wilson Avenue, Chicago, "Northwestern" terra cotta has aided the architect in producing one of Chicago's most attractive hospices.

The detail illustration gives a close-up of the ornamental terra cotta in striking designs that make this building distinctively pleasing. The adaptability of terra cotta to either the simple or ornate in design is well illustrated in this beautiful example.

The exterior of this building in "Northwestern" old ivory enamel terra cotta, with its spandrels of green and the delicate polychromework about the main entrance, exhibits a harmony in color and design that is possible only when close co-operation exists between the architect and an organization capable of successfully interpreting his ideals of those elements.



THE NORTHWESTERN TERRA COTTA CO.  
 GENERAL OFFICES AND WORKS  
 2525 CLYBOURN AVENUE  
 CHICAGO

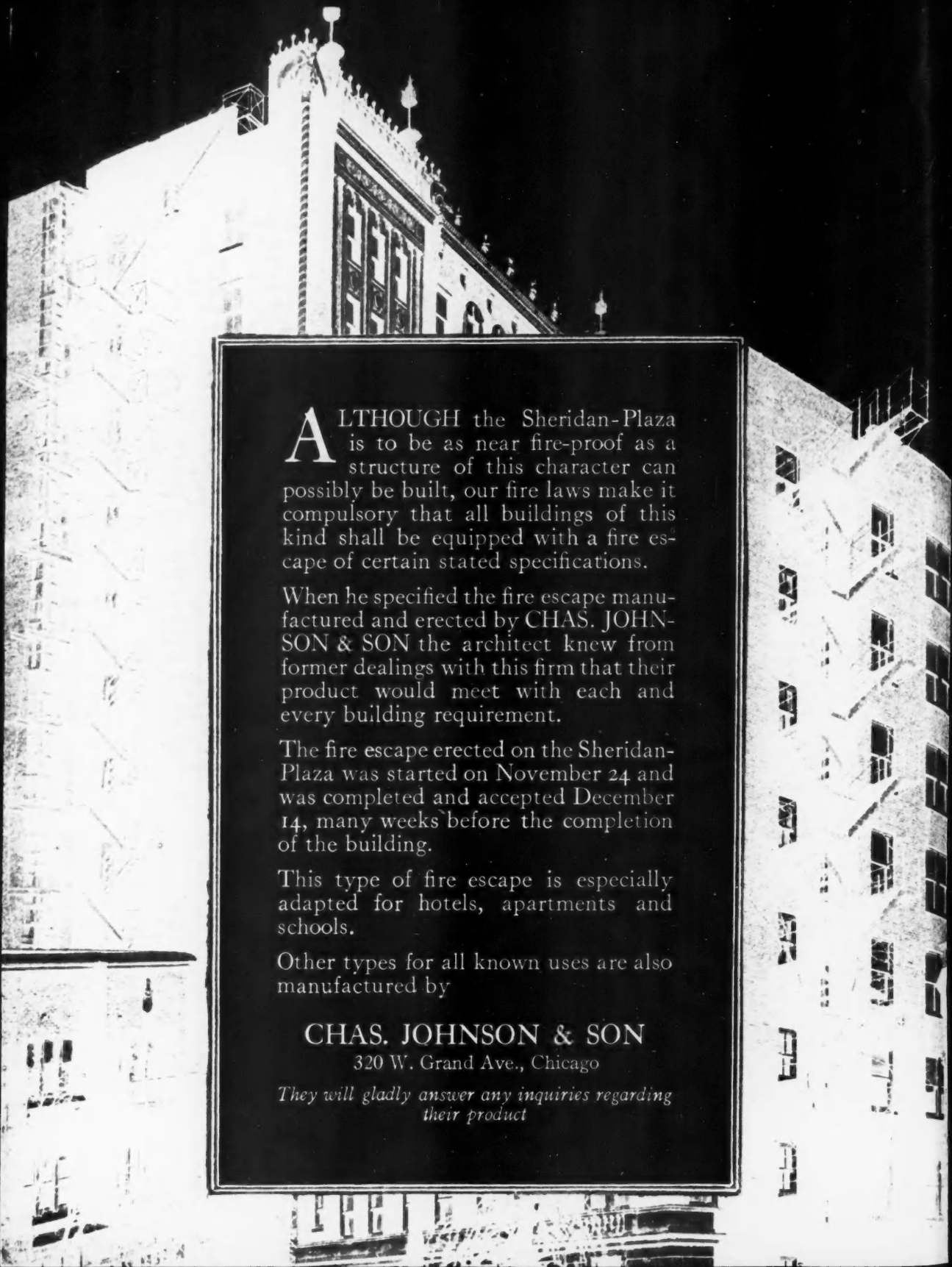


WORK OF  
 WALTER WAHLSCHLAGER  
 ARCHITECT

ARCHITECT

FINANCER





**A**LTHOUGH the Sheridan-Plaza is to be as near fire-proof as a structure of this character can possibly be built, our fire laws make it compulsory that all buildings of this kind shall be equipped with a fire escape of certain stated specifications.

When he specified the fire escape manufactured and erected by CHAS. JOHNSON & SON the architect knew from former dealings with this firm that their product would meet with each and every building requirement.

The fire escape erected on the Sheridan-Plaza was started on November 24 and was completed and accepted December 14, many weeks before the completion of the building.

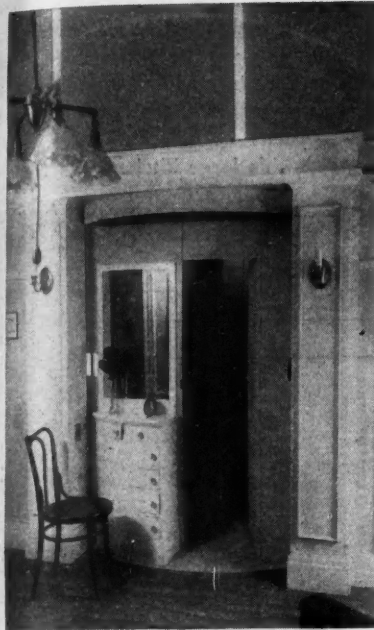
This type of fire escape is especially adapted for hotels, apartments and schools.

Other types for all known uses are also manufactured by

**CHAS. JOHNSON & SON**

320 W. Grand Ave., Chicago

*They will gladly answer any inquiries regarding their product*



**An Opportunity for Investment**

**U-TURN-IT**

**Makes 1 Room a 4-Room Apartment**

**A FEW GOOD BUSINESS MEN AND SALES MANAGERS CAPABLE OF BUYING AND SELLING OUR 8% PREFERRED AND COMMON STOCK CAN SECURE AGENCY RIGHTS TO SELL THESE DEVICES AND SUMMER COTTAGES. SEND FOR COMBINATION AGENCY CONTRACT.**

**SOLVES HOUSING PROBLEM**

This device is entirely practical and sanitary. Perfect self ventilation. Approved by New York State Tenement Laws.

Ideal for Summer Cottages and Bungalows. U-TURN-IT Hotels, Apartments and Tenements to be erected.



The patentee of this device wants every person who contemplates buying stock to thoroughly investigate the U-TURN-IT merits and to feel satisfied as to the honesty and sincerity of the men at the head of this company.

**WE WANT A FEW HIGH CALIBER MEN AS STATE AND FOREIGN COUNTRY MANAGERS**

**Picture at top left corner:** U-Turn-It Four-in-one Room as Dressing Room and Clothes-closet. Dressing room section contains clothes-closet, a combination chiffonier and dresser. Is accessible from bath room when bed is down,

**Picture at top right corner:** U-Turn-It Four-in-one Room as a Library or Living Room. The library section contains various compartments, such as book case, writing desk and drawers.

**Picture at left bottom corner:** U-Turn-It Four-in-one Room in operation changing from Dresser and Clothes-closet to Bed Room—Handles are positioned to operate with floor lock at the same time of operation.



**Picture at left, center:** The U-Turn-It Four-in-one Room as a Kitchen. The kitchenette section contains either a gas, electric or oil cooking range, sink with or without laundry tray, has hot and cold water connections, with water vent and waste air-tight joints, approved by Bureau of Plumbing Laws of City of Buffalo, ironing board, refrigerator with drain to sink. In large apartment buildings where large refrigerator plants are used there can be installed in the U-Turn-It kitchen refrigerator a coil from the plant.

**Picture at right bottom corner:** U-Turn-It Four-in-one Room as a Bed Room. The Bed Room section contains a standard recess perfectly well balanced folding bed which is always ventilated overhead when not in use.

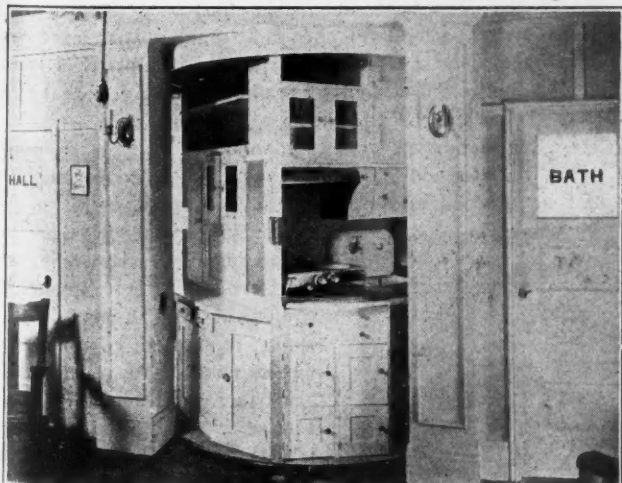


Exhibit Room in New York City, 1746 Broadway

**U-TURN-IT HOUSEKEEPING SYSTEM, Inc.**

GENERAL OFFICES, 47 NIAGARA STREET, BUFFALO, N. Y.

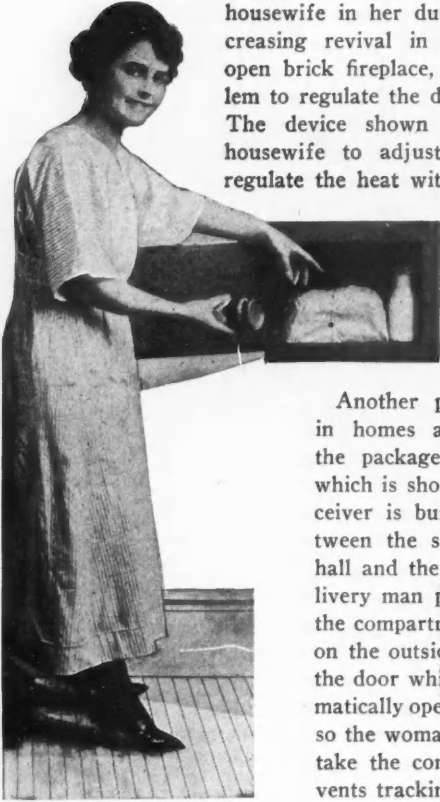
U-TURN-IT EXHIBITS IN LARGE CITIES



### Devices Increase Home Comforts

WE are living in an age of service and housewives are demanding service features more than ever in their homes. Lack of domestic help has had a profound effect upon building methods. One of the most noticeable results is the increase in labor-saving household devices which are now being installed by architects and building contractors.

In the various illustrations shown here are several unique devices not large in size and not expensive in cost, which have proved invaluable in assisting the housewife in her duties. With the increasing revival in popularity of the open brick fireplace, it became a problem to regulate the drafts satisfactorily. The device shown here permits the housewife to adjust the damper and regulate the heat without inconvenience



**Iron Package Receiver** Installed in Wall of Kitchen. The Articles Are Placed in This Compartment from the Outside by the Delivery Man. The Housewife Removes Them from the Inside.

or danger. The hook is inserted into a loop on the damper and the latter adjusted as required.

Another popular innovation in homes and apartments is the package receiver, one of which is shown here. This receiver is built in the wall between the service corridor or hall and the kitchen. The delivery man places his goods in the compartment thru the door on the outside. He then shuts the door which locks and automatically opens the inside door, so the woman of the house can take the contents out. It prevents tracking up of the kitchen by men with dirty shoes and saves the housewife many steps during the course of the day.

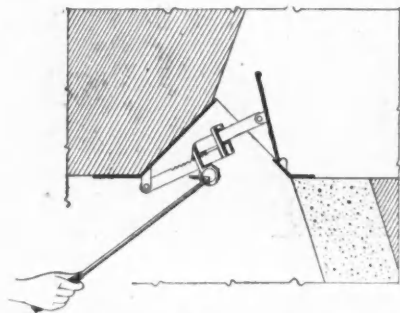
Another convenient and also protection is the meter box, a small iron box fitted with a

glass door and built into the basement wall. The meter, electric or gas, is placed in this box and is visible from the outside. The meter man can read the meter without disturbing the household. In this way many of the pseudo inspectors who gain entrance into homes on pretext of reading meters only to rob are frustrated and the wife and children protected.

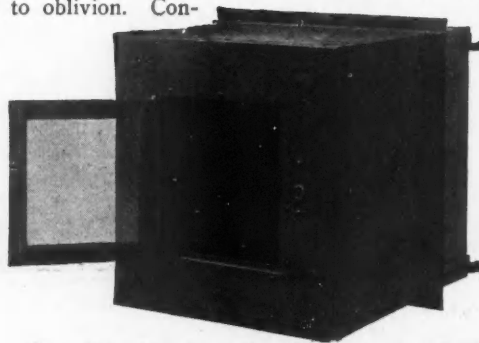


### Efficiency in Kitchen Design

ONE by one we have watched familiar rooms formerly considered essential, travel the road to oblivion. Con-

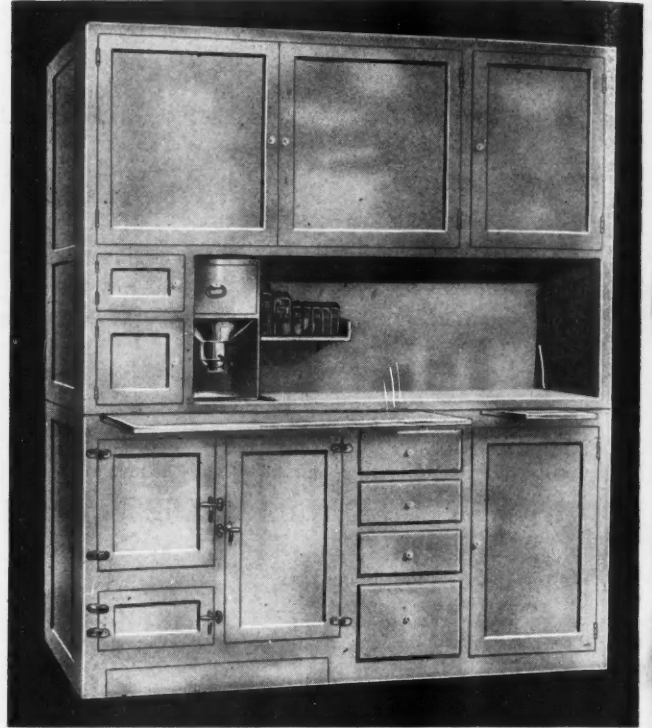


**Fireplace Damper Arrangement** Showing How Fire Can Be Regulated by Long Hook from Outside. It is Convenient for the Housewife and Safe.



**Wall Meter Box.** A Very Handy Arrangement for Holding Electric Meters so That It Can Be Read on Outside of Building. This Eliminates Any Danger from Dangerous Characters Gaining Entrance to Homes.

cealed wall beds are threatening to make the bedroom a memory, pantries have been eliminated by kitchen cabinets, dining rooms are rapidly losing their identity, and now comes the day that marks the beginning of the passing of the old familiar kitchen. Not so many years ago it was one of the large rooms of the house with a great deal of waste space that only increased the burdens of the housewife. With the advance in building ideas this large kitchen was replaced



**New Kitchenet Which Embodies Many Exclusive Features and Marks a New Development in the Space-Saving Idea Which is Attracting the Attention of All Builders and Architects. It Has Opened End Icing Facilities and Package Receivers.**

by a smaller, more compact one with all the features, but a great saving in space and energy.

Then in this interesting evolution of the modern apartment came the kitchenette, a combination dining room and kitchen all in one. The old six-room apartment with two bedrooms, dining room, and kitchen had been cut down to two rooms, the living room and kitchenette. With each passing year space has become more precious—housing is so scarce that more ways and means must be devised to accommodate more people in the same amount of space. The apartment hotel was the outgrowth of this development. Its popularity and efficiency are unquestioned, for it has proved a most lucrative arrangement as well as very satisfactory from the standpoint of the tenants.

But the demand for more saving, more convenience, will not be downed and now we have the last word in space efficiency, the kitchenet ready built to be installed where the architect sees fit. It combines the equipment and functions of a room; in short, it contains a condensed pantry with tea, coffee and spice jars, flour bin, table, refuse service where the garbage can be placed and removed from the outside by the janitor, parcel service thru which groceries, meat and milk can be delivered from the outside without tracking up the kitchen, and removed in front by

(Continued to page 156.)



# MAKE PLANS NOW

## TO INSTALL THE KNAPE & VOGT Garment Care System

### IN HOMES YOU BUILD THIS SPRING

Save Money in Construction Costs.  
Save Space, and delight your clients  
by providing them with modern  
clothes closets

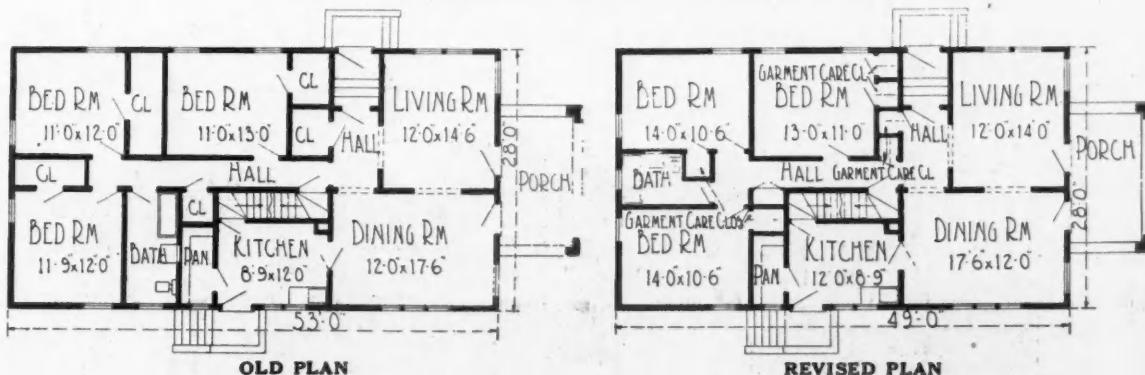


This cut shows how the modern closet equipped with the Knappe & Vogt Garment Care System appears. Occupies half the space of old fashioned closets, yet holds more garments, and keeps them in perfect order. No wasted space, no ruinous hooks. A place for everything, and everything in place.

Every room in the modern home has been improved with the exception of the clothes closet. It is now possible for builders to modernize this room also by installing orderly, space-saving closets — closets that do not mean an additional expenditure, but which, as a matter of fact, will save hundreds of dollars in construction costs. We can prove this statement in a few moments.

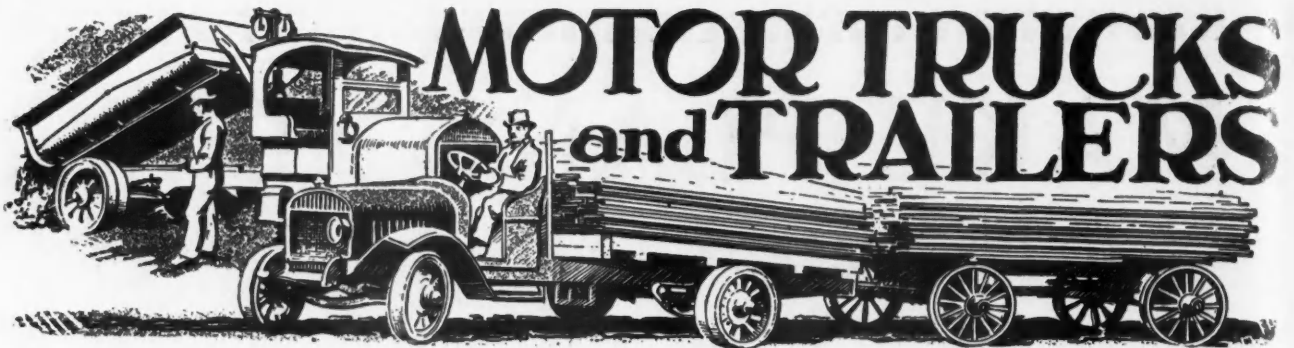
We shall be glad to assist builders with the revision of plans where Knappe & Vogt Garment Care Closets are specified. Thousands are giving satisfaction. Home owners everywhere welcome this relief from the old fashioned, disorderly closet.

#### NOTE THE SPACE SAVED IN THESE PLANS



*If you are making plans for spring building we are at your service*

**KNAPE & VOGT MANUFACTURING CO.**  
 GRAND RAPIDS, MICHIGAN



## Growing Importance of Motor Truck in Building

BUILDING INDUSTRY HAS LENT ITSELF MORE READILY TO MOTORIZATION THAN ANY OTHER LARGE ACTIVITY—HORSE IS SUPPLANTED

**I**N no other single avenue, in war or peace, has the passing of the horse been more rapid than in the building industry. This is due to the fact that the nature of building activity lends itself particularly to motorization and it is evident that untold efficiency has been added to it by the substitution of motor trucks for horse-drawn equipment.

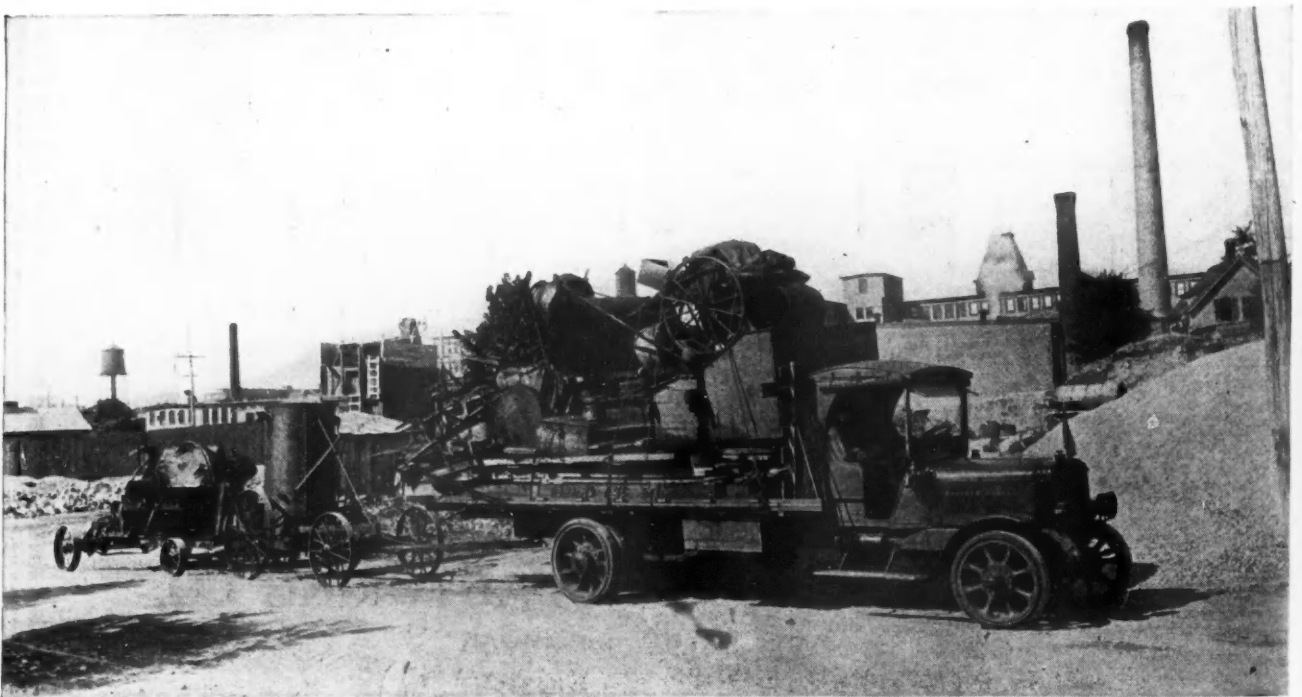
The past decade has seen a vast change in building methods and demands. Where but a short time ago the erection of a great structure was looked upon as the work of years, today a building almost grows out of date between the time the completion of the architect's plans and the announcement of the building's opening unless speed is used. The builder who attempts to meet the requirements of present-day efficiency cannot hope to succeed unless he uses one of the most important mediums for obtaining this speed, namely, motor transportation.

Demonstrating from the beginning that it possesses not only unusual carrying power, but speed as well, the

truck has come to mean the salvation in many cases of builders who were confronted with transportation problems. He has found it cuts down delays in hauls and also by the addition of special dump bodies and loading equipment saves many minutes at starting point and destination.

The lumber dealer has recognized the value of the truck as rapidly as any single member of the building industry, a fact demonstrated by the 11,000 odd trucks which are now owned and operated by lumber dealers alone. Furthermore, the advent of trailers has helped them to carry double the load on one trip. With a large building program imminent this year, the motor truck may be counted upon to play a very important part in the work.

**T**HE supply of used crank case oil should be frequently drained and replenished with a fresh supply. For trucks in constant service this *should be done every week in cold weather*, decreasing to once a month in heat of summer.



One of the Many Ways in Which the Motor Truck Serves the Builder Here the "Acme" Is Performing Vallant Service Hauling More Than Its Share of the Load to the New Job. Moving Is One of the Builder's Difficult Jobs, But Motor Trucks Have Accomplished Much in Speeding Up This Work. Next Month Will See Many Such Pictures. This Five-Ton Truck Is Owned by Coats and Whitehead, Contractors, New Bedford, Mass.

# Old Chief "Ruff Stuff" Greets You



He stands for Good Sand Paper—WAUSAU sandpaper—made from the wonderfully hard, sharp, clean Flint Silica that we get from "Rib Mountain"—a vast pile of solid quartz that looms up, mountain-like, just outside of Wausau—the highest point of land between the Alleghanies and the Rockies.

And our tough, flexible paper backing is made from long-fiber pulp, to our order, by paper mills at Wausau.

Then we use the very highest grade of *hide glue* to stick 'em on.

You can't beat Wausau "Ruff-Stuff" at any price. Try it.

=====  
**Send for a Free  
Book of Samples  
Use the Coupon**  
=====

**WAUSAU ABRASIVES CO.,  
122 So. Clinton St., Chicago.**

Please send me, *free*, a book of samples of Wausau Flint Sand Paper.

I usually buy my sand paper from

(Dealer's Name).....

(Dealer's Address).....

Signed.....

Address.....



### Rules for Care of Tire Equipment

**I**N order to secure the best service from the tires on this truck, whether they are solids or pneumatics, there are a number of important rules which the driver

should observe. Some of these points are presented in the following:

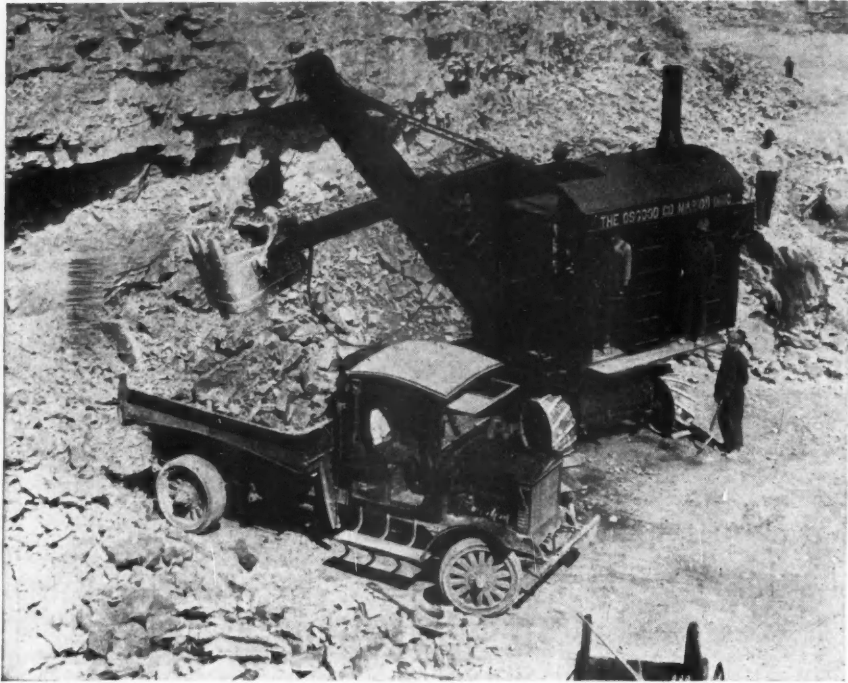
1. All truck tires have a load limit. Constant slight or occasional heavy overloads shorten tire life.

2. Distribute the load in the truck body so each tire will bear its proportionate share of the weight carried.

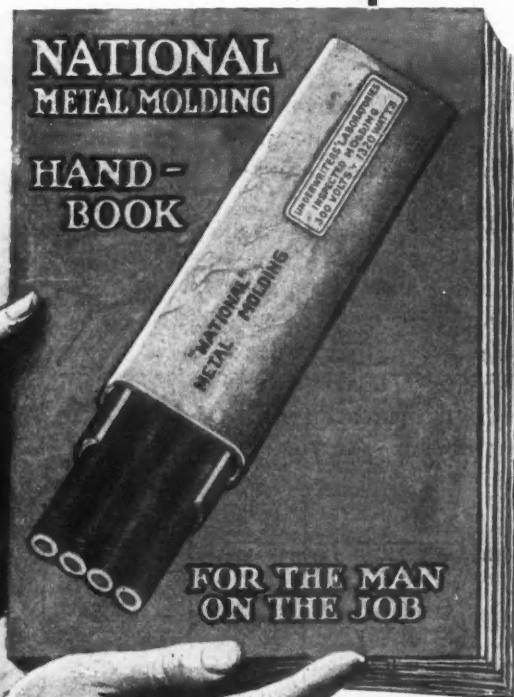
3. Overspeeding a tire has the same harmful effect as overloading. Keep truck speed within prescribed limits.

4. Know—don't guess—your inflation figures. Too frequently we find drivers who give but scanty thought to proper inflation of tire equipment. The inevitable results from such neglect are disastrous. Proper inflation pressure is as important as proper loads and speeds.

5. Tires are limited in shock absorbing power. Careful, slow driving on rough or rutty roads will reduce tire costs.



In the Grueling Work of Excavation, the Motor Truck Has Demonstrated Its Staying Power Very Effectively. The Steam Shovel and Special Loading Body for Trucks Have Eliminated Delay at Loading and Unloading Points. This "Service" Truck Makes the Grade Several Times Daily with a Capacity Load.



## THIS BOOK IS FOR YOU

We have prepared this book for the solution of all surface wiring problems—both for remodeling work and in certain kinds of new work where electric wires are run on walls, ceilings or other surfaces.

National Metal Molding is known as "The Standard for Surface Wiring." It can be used for every kind of surface wiring installation. It does away with unsightly surface wires, providing instead, a neat, inconspicuous and absolutely safe installation.

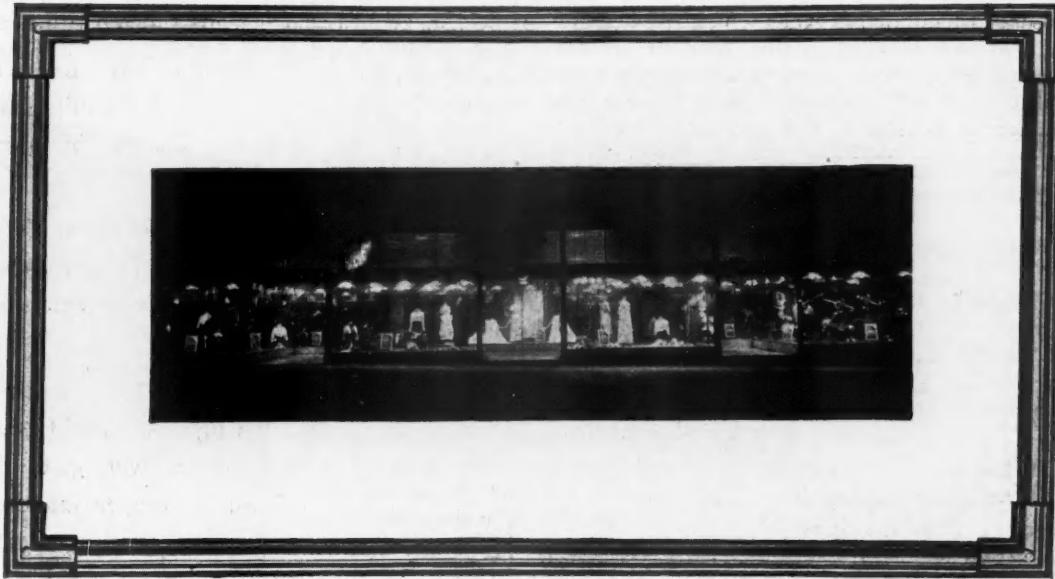
### Approved by Underwriters

National Metal Molding is listed by the Underwriters' Laboratories as an approved raceway for surface wiring.

Be sure and write for your copy of this convenient, handy and helpful book.

**NATIONAL METAL MOLDING CO.**

Publication Dept. Fulton Bldg., Pittsburg, Penna.



## Contractors and builders agree

that a client's needs should rule in the selection of building materials. Past experience has proved that the **best** in store front construction are

### ZOURI SAFETY METAL STORE FRONTS

Tested and approved by Underwriters' Laboratories, the Zouri key-set line is recognized as unequalled for strength, beauty, maximum display value and minimum glass breakage.

#### Consult Our Nearest Representative Without Cost

We have one hundred and ninety-three distributors throughout the United States and Canada, each equipped with a full line of **Zouri** and **International** construction, ready to serve you. There is no obligation incurred through consulting them. Write us for the name of our nearest distributor. He will gladly discuss your building problems with you.



The  
Key to  
Better Windows

## Zouri Drawn Metals Company

Factories and General Offices:

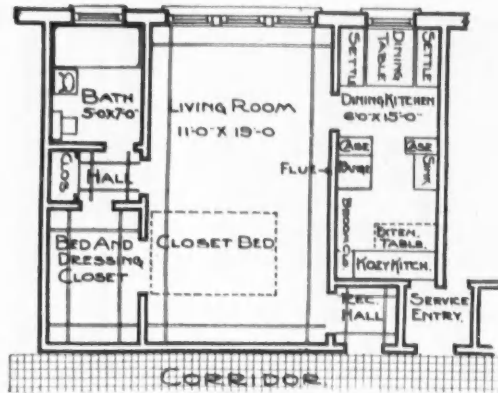
CHICAGO HEIGHTS, ILLINOIS

*Makers also of the famous International Store Front Construction*

**Efficiency in Kitchen Design**  
(Continued from page 150.)

the tenant, work table, 25 by 40 inches, with white steel refrigerator with icing arrangement on the outside, capacious shelving, bread board, one linen drawer, and many other utility compartments that are included in the complete kitchen and pantry.

This kitchenet is placed against the wall between the apartment and service corridor so that the various receivers



Floor Plan of Modern Apartment, Showing How Space Is Conserved by Use of Wall Beds and Kitchenet. Two Rooms Serve the Purpose of Four.

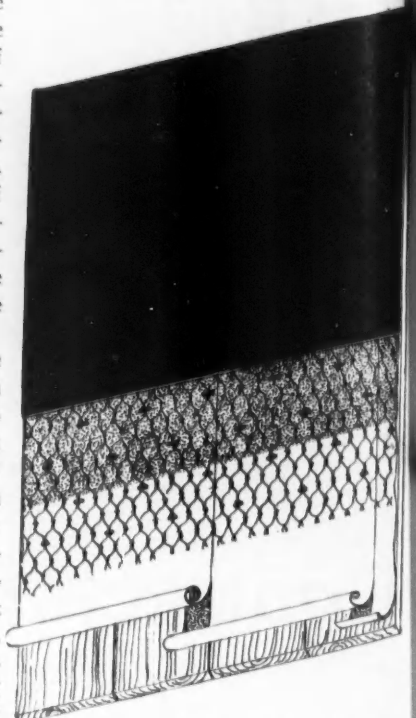
can be opened from the outside.

The floor plan shown here gives an excellent idea of the layout of an apartment with the kitchenet installed. The dining room and kitchen are included in one room separated by two cases about 4 feet high which hide the view of the kitchen from the dining settee, but also allows full ventilation thru the window above the dining room table.

**Making the Roof Water-Proof**

ANYONE who has tried to catch rain leaking thru a bad roof in six or seven buckets will appreciate the real value of a leak-proof roof. Architects and builders will be interested in a new waterproofing method that has been devised to eliminate all danger from faulty roofs. By the combined use of two or more products which are available a system of reinforced roof construction has been devised which is designed to waterproof. It is a combination of the integral and membrane systems of waterproofing which are well known to the building trade.

First the concrete mass is mixed with an integral waterproofing compound in the proportion of 1 to 50. This is then covered with a layer of fibrous mastic material, a sort of insulating layer, about 1/8 to 1/4 inch thick. After this has hardened the final layer of concrete is laid and waterproofed.



New System of Waterproofing Concrete Roof.

**This Woman's Message**



The Builders of Today Must Please the Women

Will be mailed free to readers of "THE AMERICAN BUILDER"

She deals with the subject of better kitchens, and incidentally has something to say about

**"KOZY-KITCH"**  
**Readi-Built Kitchenets**

THE QUALITY LINE

For Apartments - Bungalows - Homes

Write to our home office today for this "message," with our new complete catalog, which contains illustrations, detailed drawings, specifications and full information.

**THE ELECTRIC KITCHENET COMPANY**

Dept. B.

FORT WAYNE, IND., U. S. A.

SALES AGENCIES IN ALL THE PRINCIPAL CITIES



Here's the Help you need

NO matter how good a workman you are. No matter how much you know about your business and the particular kind of work you are doing—there are times when you are bound to need help. Here is just the help you need:

- When you want to know the newest and best ways of doing things—
  - When you get stuck on some unusual piece of work—
  - When you want to know all there is to know on any Building subject—
  - When you want to estimate the cost of any kind of structure—
  - When you want to write up contracts and specifications—
  - When you want to be sure you are right instead of guessing—
- Then turn to the

# World's Greatest Building Books

The combined knowledge and methods of 25 well known building specialists. The finest and most up-to-date books ever written on the subject. They cover everything a man in your line should know. Five big books crammed full of money-making facts. 2200 pages, and more than 1000 pictures, blueprints, plans, and diagrams—everything in plain, everyday English—everything made as simple as A. B. C. Thousands of sets have been sold to carpenters, contractors, architects, builders, and apprentices in all classes of work. See trial offer below that puts a set in your hands for one week FREE.

## FREE Trial!

### Don't Send Any Money

Just fill out and mail the coupon. It brings all five books for you to use as you please for a whole week. Look them over carefully. Show them to your fellow workmen and send them back at our expense if you don't think they are everything we claim. If you are satisfied with the books in every way, send us only \$2.80 as first payment and \$3.00 each month thereafter, until a total of \$24.80 is paid. Mail the coupon now and we will give you a consulting membership in this Society worth \$12—FREE.

A Few of More Than 1000 Things Explained—Carpentry Stair Building—Steel Square—Plastering and Painting—Mechanical Drawing—Blueprint Reading—Architectural Drawing—Sheet Metal Work—Building Superintendence—Underwriters' Requirements—Heating and Ventilating—Steam and Hot Water Fitting—Sanitary Appliances—Water Supply—Drainage and Venting—Domestic Hot Water Supply—Hardware—Estimating—Contracts and Specifications—Legal Relations—Building Code—General Index and Review Questions and Index to each volume.



## Cut Price Coupon

AMERICAN TECHNICAL SOCIETY  
Dept. C 332, Chicago

Send me a set of Carpentry and Contracting Books in five volumes by express collect for a week's free use. I will either send the books back to you at the end of a week at your expense or send you \$2.80 as first payment and remit \$3.00 a month until \$24.80 is paid. With the books I am to receive a membership in your Society FREE.

Name.....  
Address.....  
Reference.....



# MURPHY In-a-Dor BEDS

**"Lessen the Cost of Construction About  
One Thousand Dollars Per House"**

**H**ERE'S a typical case in which Murphy In-a-Dor Beds are actually saving thousands of dollars in construction costs. The attractive small houses pictured above are now being completed by Willis & Deason of Janesville, Wisconsin. These houses are equipped with Murphy In-a-Dor Beds.

If you are contemplating building, you will find the following letter very interesting:

**Murphy Door Bed Company**  
Chicago, Illinois  
Gentlemen:

Some short time ago we purchased from your Company In-a-Dor Beds to install in the houses which we are building in this city. Upon giving them a thorough trial we find they not only make a satisfactory bed, but also lessen the cost of construction of houses about \$1000.00 per house.

We are erecting 200 new homes in this city for the Carle-Welsh Co., and will without a doubt, use the Murphy In-a-Dor Bed in each and every house, as we feel that they are by far the most satisfactory and economical article used in them.

Very truly yours,

WILLIS & DEASON.

Send today for literature and complete information concerning our service to Architects and Builders.

## Murphy Door Bed Company

22 W. Monroe St., Chicago    Chemical Bldg., St. Louis  
469 Fifth Avenue, New York    1103 First Avenue, Seattle, Wash.  
1435 Blake Street, Denver    659 Lander News Bldg., Cleveland  
912 Kresge Bldg., Detroit, Mich.    305 City Club, Kansas City  
205 O'Connor St., Ottawa, Canada    111 Murphy St., Dallas, Tex.  
Crocker Bldg., San Francisco    204 Peach Tree Arcade, Atlanta, Ga.



There is  
only ONE  
In-a-Dor  
Bed—  
It's a  
MURPHY

## The Calendar Crop

The beginning of each new year brings to the office of the AMERICAN BUILDER a new crop of calendars. They are sure of a glad welcome because of their many artistic and novel features. Listed below are some that have been received, with a short description of each:

**Radford Publications**—Twelve-sheet, four-color offset Golden Glow Farm Building Panorama patented calendar, showing various types of farm buildings, including homes, barns and garages. This calendar is distributed thru the best lumber dealer in each community, and he is also supplied with twenty sheets of blue prints showing in detail the construction of the buildings illustrated.

**Universal Portland Cement Co., Chicago, Ill.**—Twelve-page, big-figure calendar in colors, each page showing the current month and a week or more of the preceding and succeeding months. Each page is printed in different color combinations.

**General Electric Co., Schenectady, N. Y.**—Large twelve-sheet, big-figure calendar in colors, each page containing an illustration of some electrical appliance, device, or machine. Each of these pictures is surrounded by sketches depicting some scene in which electricity plays a prominent role. The preceding and succeeding months are shown below the current month calendar in smaller figures.

**Atlas Cement Co., New York, N. Y.**—Single sheet with large center calendar pad containing twelve sheets. Each sheet on the pad contains picture of some prominent work of construction, in which Atlas cement has been used. The preceding and succeeding months are shown on each sheet of the pad.

**F. E. Myers & Bro., Ashland, Ohio**—A long wall hanger similar to the style so familiar with the friends of this company, illustrating the complete Myers' line of pumps, hay unloading tools, door hangers, etc. This type of calendar has been distributed by the company for thirty years to thousands of friends and dealers. The calendar bears the familiar slogan, "Take off your hat to the Myers."

**Lehigh Portland Cement Co., Allentown, Pa.**—Large single sheet calendar with big-figure pad in alternating colors. Each sheet on calendar pad contains map of United States showing location of various Lehigh mills, also small sections showing preceding and succeeding months.

**The Sandusky Cement Co., Cleveland, Ohio**—Single sheet with calendar pad. Set in frame design showing ornamental cement construction, is a picture of construction in which "Medusa" brand cement was used.

**Sampson Cordage Works, Boston, Mass.** Small, attractive desk calendar with pad. Sampson Spot cord is featured on the back flap which serves as a supporting bracket.



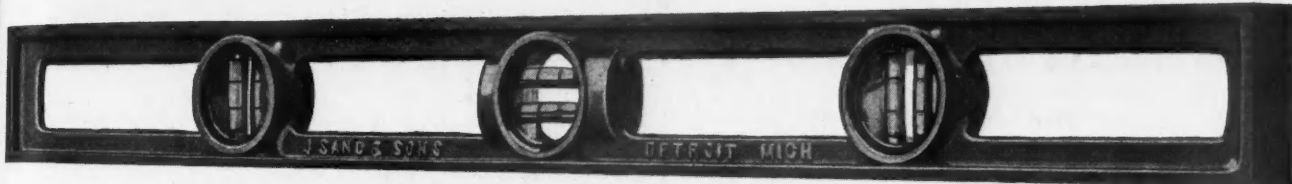
**P**AIN'T dealers and master painters could take advantage of that human yearning for something new, something different, to create a lot of interior decorating work this winter.

Most interior woodwork is in the natural wood finish. Advertise, calling attention to the beauty of white or ivory enamel finish for living rooms, dining rooms or bedrooms. The beautiful gloss or rubbed finish imparts an air of daintiness and cheerfulness to the room. It makes a particularly pleasing contrast to mahogany furniture.

Just make the suggestion in your advertising—pointing out, of course, the beauty of the enamel finish, and let the housewife's natural, human yearning for change, for something new, do the rest.

# SAND'S

## Aluminum Levels—Light, Strong, Accurate



Here is a level any particular workman is proud to own and use.

It is made in a heavy milled skeleton frame of 99 per cent aluminum. It is fully 50 per cent stronger than others, yet the lightest level made.

Hold this aluminum level as high as you can. Its lightness makes it ideal for overhead work—for plumbing ceilings, shafting and girders. You will see how it saves tired arms. You will see that its lightness and the firm fingerhold save it from being dropped and broken.

Not only does this level give strength, lightness and convenience, but it provides also the high standard of

The aluminum level shown—and all other Sand's levels—have those noteworthy features that have naturally been developed in twenty-five years of leadership in level making.

Remember in buying your level, that J. Sand & Sons, established in 1895, were the originators of aluminum levels.

Sands originated the walnut level.

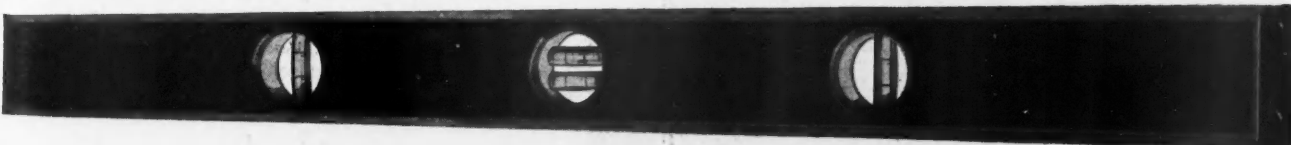
Sands originated plate glass lenses to protect spirit glasses—to make them dustproof, dirtproof and waterproof.

Sands originated the solid set spirit glasses that require no adjustment.

Sands originated wire, friction grip locaters at each end of the bubble.

The number of plumb and level glasses is varied to suit the workman and the work to be done.

Ask your dealer to show you the Sand's levels in aluminum, pine and walnut. If he cannot supply, have him send for just the level you want. Write for our folder describing Sand's levels of all types, sizes and forms for use on every kind of work. Twenty-five years of experience insures their absolute accuracy.



J. Sand & Sons, 4841 Rivard Street, Detroit, Mich.

# LEVELS





## NEWS OF THE FIELD

### White Lily Firm Builds New Plant

THE new plant of the White Lily Mfg. Co., Davenport, Iowa, has been completed and is now in operation.

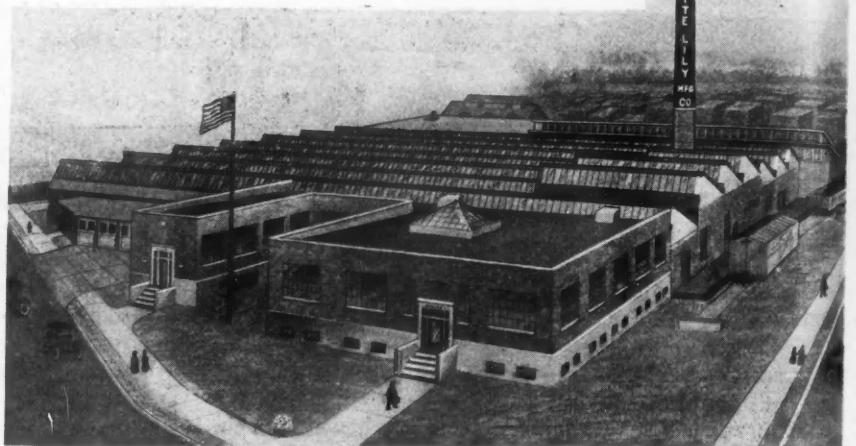
About nineteen years ago Sam T. White organized a small company, starting the manufacture of washing machines. The work which the machine did was so great an improvement over washing by hand that business grew rapidly. Other types of machines were added to the line, improvements were made to meet the varying conditions in the home.

Additions were made to the factory in order to take care of the rapidly increasing business and more ground was acquired, still they were cramped for room and hampered by lack of manufacturing facilities. The new factory is the result. It is modern in every detail, covering over 60,000 square feet of floor space and will increase the present production over 200 per cent. It

is built on the latest improved models of factory architecture with saw-tooth roof and well lighted, heated and ventilated.

The departments are so arranged that raw material enters the receiving room, goes thru the machine shop, tin shop, assembly department, finishing room and finally thru the shipping room and is loaded directly into the freight car. In this manner the production is increased and operating costs reduced to a minimum.

Possibility of lost production thru shutdowns caused by lack of power and light, as supplied by public utilities companies, has been eliminated by the installation of their own power plant. Each group of machines is driven by a separate motor.



New Factory of White Lily Mfg. Co., Davenport, Iowa. It Covers 60,000 Square Feet of Floor Space and Is of Modern Construction.



Residence of Mr. A. G. Rose, Jr., River Forest, Ill.



Write for Our New Pamphlet "Saving Money in Home Building"

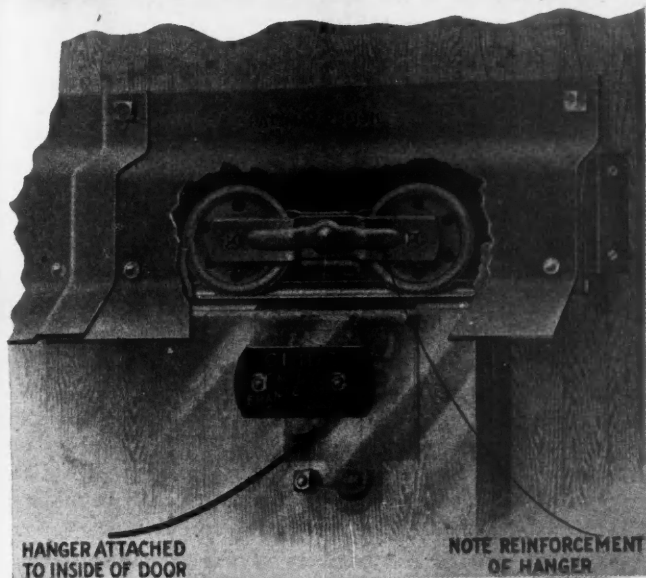
**MACADAMS & CALL**

111 West Washington Street Chicago

### Great Strength and Economy Gained in Bridge Construction Without Sheathing by applying E-Cod Fabric Direct to the Studs, Exterior and Interior.

THIS residence of A. G. Rose, Jr., River Forest, Illinois, has attracted wide attention because erected without sheathing at a net saving of about \$600.00 on the exterior alone. All side walls were reinforced by a bridging construction of 1"x6" boards. To the studs, exterior and interior, E-COD FABRIC was applied. The heavy waterproofed felt backing of E-COD FABRIC furnished double insulation against cold and heat, serving as a base for stucco on outside and plaster on interior walls. For economical, durable construction, E-COD FABRIC is "the ideal plastering base," being waterproof, rustproof and weatherproof, fire-retardant and sound-deadening.

# Look it over!



**T**HE "GLIDE" HANGER has several features that have made it a favorite with hundreds of carpenters all over the United States.

**For Instance**—The drop strap of hanger fastens on the back or inside of the door and for this reason can be easily fitted to any thickness of door without blocking out the tracks.

**And Again**—The carpenter is saved a lot of time and trouble by the ease and quickness with which the track can be erected. The Glide track comes in one piece with the joints telescoped and made to lock together in perfect alignment.

**Above All**—When you hang a door with "Glide" Hangers you can be sure that your customer is going to be well satisfied **Because**—

## GLIDE HANGERS

### CAN'T STICK OR JAM

Notice the wide track tread. Almost flat. The rollers are bound to run easy on this track.

### THEY ARE WEATHER PROOF

The track fits snug up against the wall and the water shed provides perfect protection against rain, snow and nesting birds.

The Door is Carried Just the Right Distance From the Building, and Coupled Close to the Track.

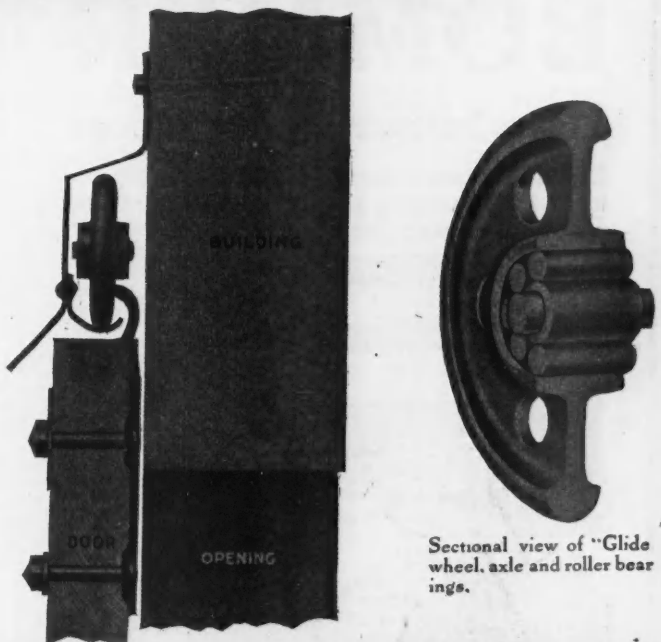
This prevents any drip on top of the door.

### FREE PLANS

Our Engineering Department has a corps of experts ready to answer any construction problems which you may ask. We also provide free plans to aid you in any problem requiring the use of Frantz Hardware.

Stop in at your local dealer and ask him to demonstrate the merits of the "GLIDE." If he has the AGENCY for this hanger and track he will be very glad to do this and at the same time he can quote prices, etc. Or write us for circulars, at the same time send us your dealer's name.

See the Glide Before You Decide



# FRANTZ MFG. CO.

## STERLING ILL

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

### Notes of the Steel Lumber Field

**T**HE National Pressed Steel Company, Massillon, Ohio, producers of steel lumber sections has opened district offices in Atlanta, Ga., and Dallas, Texas. Mr. J. A. Bickel is in charge of the Atlanta office and Mr. W. A. Warman is in charge of the Dallas office.

Mr. John S. Butler has been placed in charge of the steel lumber department of the Kansas City Structural Steel Company, Kansas City, Mo.

Mr. Thomas Kelley, Jr., has been made manager of the steel lumber department of the Van Dorn Iron Works, of Cleveland, Ohio. Mr. Kelley was formerly manager of the jail department of the same company.

In the loading test of a "National" steel lumber floor panel recently held in Minneapolis, Minn., the floor, which was designed for a live load of 75 pounds to the square foot, sustained a load of 250 pounds with a bare fraction of the allowable deflection. The test was given by the Crown Iron Works, fabricators of steel lumber in Minneapolis, at the request and according to the directions of the Minneapolis building inspection department. Will F. Holman, associate professor mathematics and mechanics, University of Minnesota, checked and certified the test.

A steel lumber department has been added to the district office of the National Pressed Steel Company, 1213 Conway Building, Chicago, and Mr. R. F. Tickle placed in charge. Mr. Tickle was formerly in charge of the National Pressed Steel Company's district office at Kansas City. Mr. T. A. Lucy succeeds Mr. Tickle at Kansas City.

The Des Moines Steel Company, fabricators of steel lumber and structural steel at Des Moines, Iowa, exhibited a miniature steel lumber floor section and steel lumber stud partition section at the Chamberlain Hotel during the convention in Des Moines of the Iowa Engineering Society, Jan. 16 to 19.

### Unusual Book Issued

**A** REALLY remarkable book is "Building with Assurance," which has just been issued by the Morgan Woodwork Organization of Oshkosh, Wis., Chicago, Ill., and Baltimore, Md. It contains a wealth of interesting and valuable information for everyone who is planning to build a home, as well as for architects, contractors and builders.

It is said that more than two years have been devoted to the preparation of this book, and that it represents an investment of more than \$150,000.

Such important subjects as plumbing, heating, lighting, interior decoration, floor coverings and other details, are discussed by recognized authorities in their lines.

Beautiful colored plates show scores of original designs for charming cottages, bungalows, Colonial houses, and other types of dwellings. There are many original ideas for living rooms, bedrooms, porches, kitchens, stairways, breakfast nooks and other building details. The book is handsomely printed and bound.

### Dunn Sells Out Hand Machines

**W.** E. DUNN MFG. CO. have disposed of their line of molds and hand machines to the Concrete Equipment Company, of Holland, Mich.

They have taken this step so as to direct their entire attention to the manufacture and sale of improved power equipment. This concrete equipment company is getting out a new catalog which will be ready for distribution about the first of February.

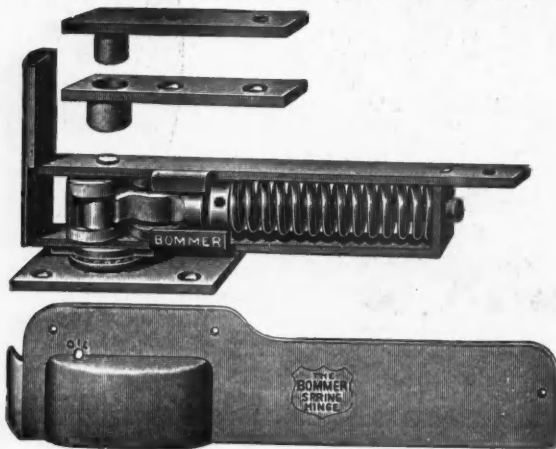
### Devoe & Reynolds Hold Conference

**T**HE eastern and western executive manager of the various Devoe & Reynolds Co., Inc., recently assembled at the Hotel Astor for a four days' conference. The entire 16 branches and warehouses of this company were represented.

# BOMMER

## Floor Surface Spring Hinge

Double or Shingle Action, Holdback, Ball Bearing. Every moving part of this hinge can be oiled from a single hole on outside of side-plate



The most durable hinge of its type; holds the door open when swung to 90 degrees at either side

Your Hardware Merchant Can Supply Them

**Bommer Spring Hinge Company, Brooklyn, N.Y.**



Stained with Cabot's Creosote Stain  
O. M. Hart, Architect, Bay Shore, N. Y.

## Stained Shingles

The Warmest, Most Artistic and Most Economical of all House Finishes

Wood shingles are two or three times warmer than the gummed paper substitutes, and they are cheaper, last longer and are incomparably more artistic and attractive. When stained with the soft, moss-greens, bungalow-browns, tile-reds and silver-grays of

## Cabot's Creosote Stains

they have a richness and beauty of tone that no other finish can equal and the creosote thoroughly preserves the wood. Use them also on siding, boards, sheds and fences. Anyone can apply them with best results at least expense.

## Cabot's "Quilt"

makes floors and partitions sound-proof by breaking up the sound-waves and absorbing them. It makes walls and roof cold- and heat-proof by a cushion of minute dead air spaces that prevents the conduction of heat. From 28 to 50 times as efficient as cheap building paper.

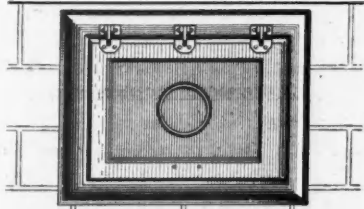
You can get Cabot goods all over the country  
Write for samples and name of nearest agent.

## SAMUEL CABOT, Inc.

Manufacturing Chemists BOSTON, MASS.  
1133 Broadway, New York 24 W. Kinzie St., Chicago  
Cabot's Brick Stains, Stucco Stains, Conserve Wood Preservatives, Damp-proofing, etc.



# Sykes Coal Door Stands The Strain



*Automatically locked, Burglar Proof.  
Can be opened only from the inside.*



*The special hinge locks the door open.  
Cannot fall shut nor flap in the wind.*



**S**YKES Coal Door is made of heavy pressed steel with malleable iron fixtures and is absolutely unbreakable.

It is neat in appearance and may be easily installed in new or old buildings. It replaces the unsightly broken window and marred wooden frame.

The door has been a big seller wherever shown. It is inexpensive and presents the most satisfactory solution of the coal door problem.

Write for further information. If a dealer, here is an article you can handle with satisfaction and profit.

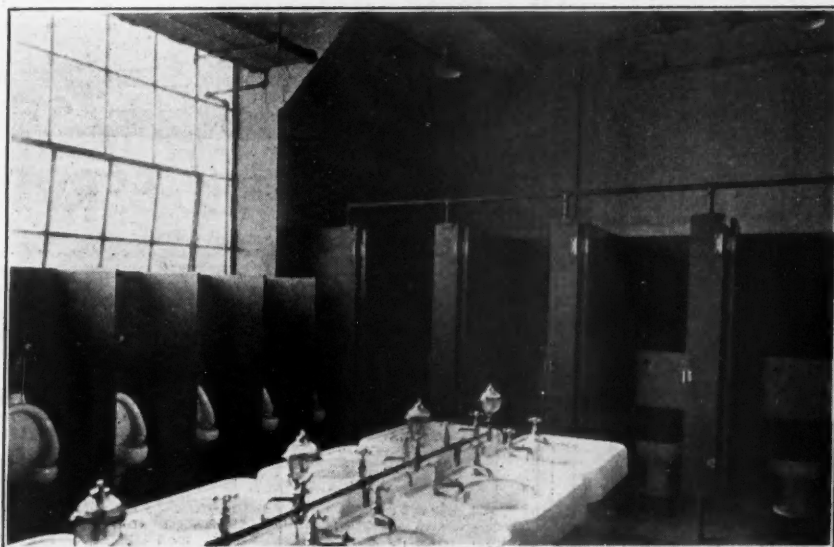
**Sykes Metal Lath & Roofing Co.**

504 Walnut Street,

Niles, Ohio

## SLATE INSTALLATIONS

EMERGENCY FLEET BUILDING, PHILADELPHIA



**THE STRUCTURAL SLATE COMPANY**

PEN ARGYL, PENNSYLVANIA

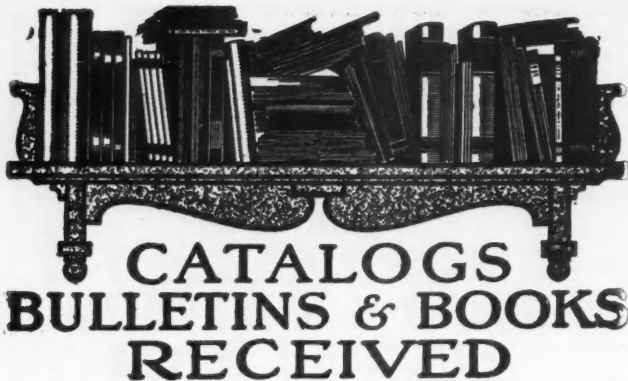
All the toilet rooms in this eleven story building, erected for Hudson Automobile sales and show purposes, later commandeered by the Emergency Fleet Corporation, are slate equipped similar to the one shown.

**Charles E. Oelschlager**  
Architect

**William M. Anderson**  
Plumbing Contractor

**George R. Peacock**  
Slate Contractor





**CATALOGS  
BULLETINS & BOOKS  
RECEIVED**

The following literature, dealing with subjects of interest to builders is now being distributed.

"Essex, a Connecticut River Town," is the title of Number 6 of the White Pine series of Architectural Monographs with introductory text by H. Van Buren Magonigle. It contains some very interesting pictures of old New England buildings which were constructed of white pine. There is also a short article on the use of white pine for lath, and door and window framing.

Complete specifications for the use of Bishopric Board have been prepared in loose leaf form for contractors and builders by the Bishopric Manufacturing Co., Cincinnati, O. It covers the application of Bishopric stucco base, plaster base, insulating base and sheathing. Working drawings are included in these specifications.

"One Hundred Twenty-fifth Anniversary Bird & Son, Inc., 1795-1920" is the occasion of a beautiful booklet issued under the signature of Charles Sumner Bird, president. It is a graphic record of the firm thru three generations and contains many attractive pictures of the old and new factors of the firm.

Donley Devices and Building Specialties are described and illustrated in a new booklet now being distributed by the Donley Bros. Co., Cleveland, O. Among the articles in this list are package receivers, garbage receivers, fireplace dampers, ashpit doors, electric meter boxes and coal chutes.

Koehring Construction Mixers are the subject of a new color cover catalog No. 22 issued by the Koehring Machine Co., Milwaukee, Wis. It contains illustrations and specifications of the mixers included in the Koehring line. Supplementary booklets on the Dandie Mixer and special pavers are also being distributed.

"Quarry Tiles for Floors" is the subject of a new catalog recently prepared by the United States Roofing Tile Co., Parkersburg, W. Va. It contains specifications and instructions for the use of clay or terra cotta tile in

mantels, porches, kitchens, bathrooms, etc.; also several beautiful views of interiors in which it has been used.

"Pyrono Fire-proof Doors and Trim" is the title of an attractive cover booklet issued by the Pyrono Process Co., Columbus, O. It covers in detail by description and illustrations the complete Pyrono line, consisting of interior doors and trim, smoke proof stair hall screens for hotels, exterior doors and jambs for fire escapes, wainscoting, ceilings, etc., for office buildings, apartments, hotels and residences.

The latest price list of the Lee Line of motor truck equipment is now available in the form of a booklet issued by the Lee Loader and Body Co., Chicago. The list includes motor truck trailers, truck and trailer bodies and special truck and wagon loaders for gravel pits and railroad cars.

## STEEL for Quick Construction

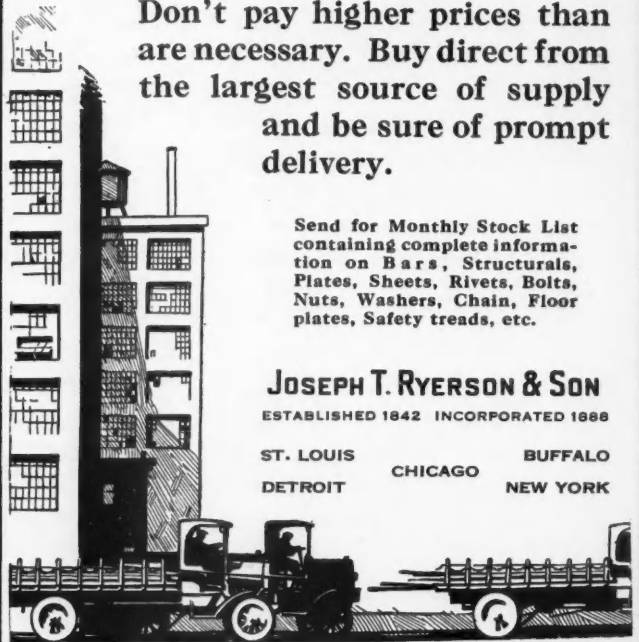
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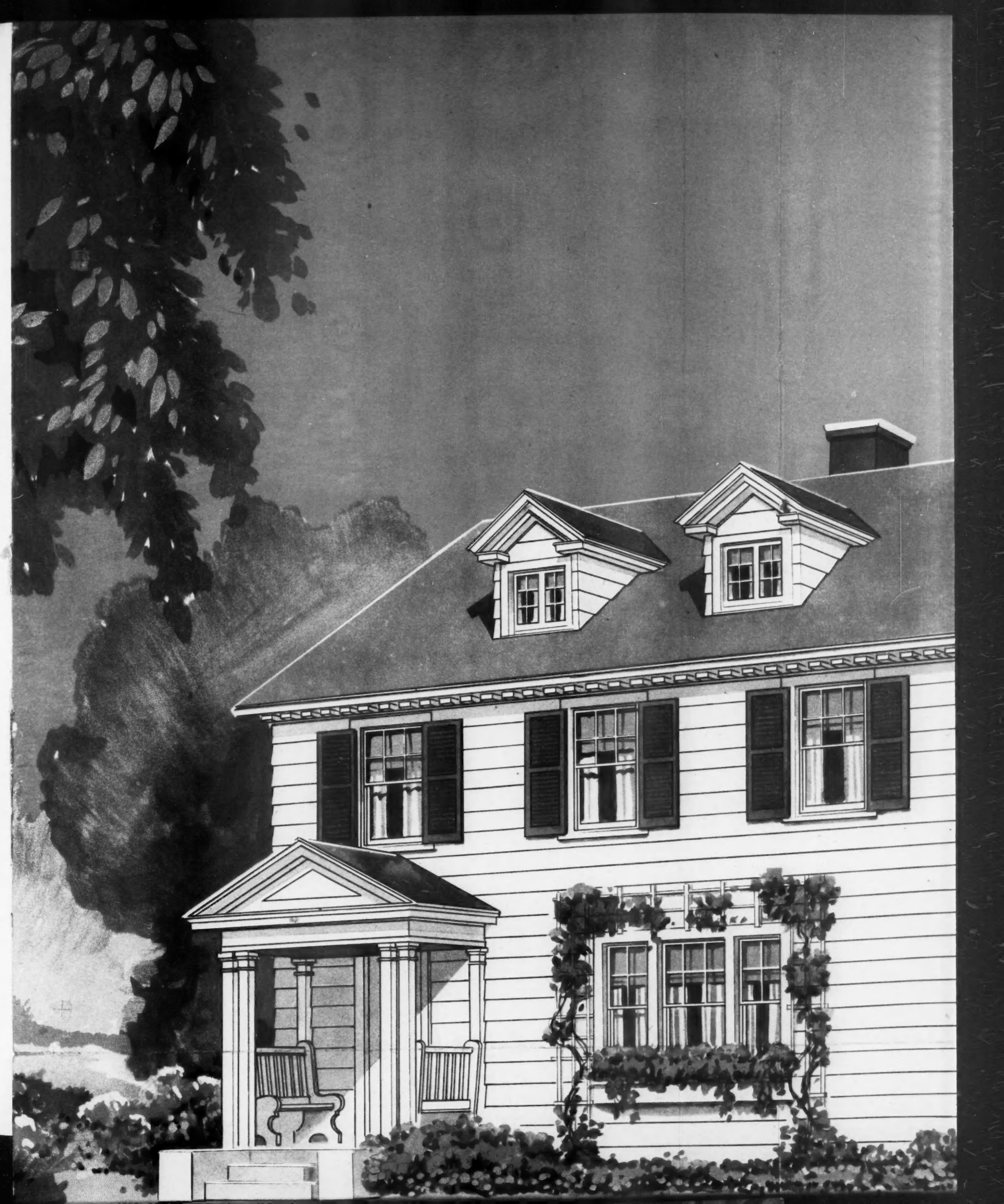
# DIAMOND

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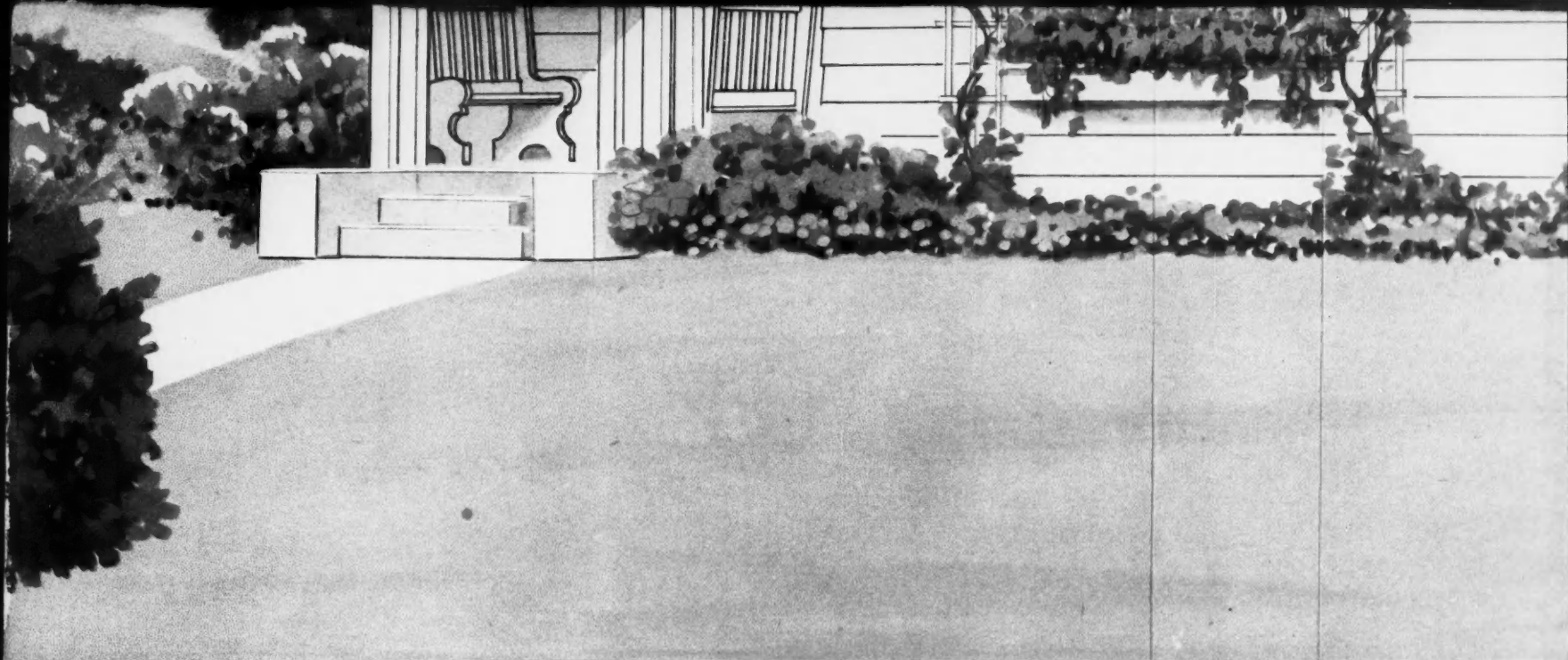












## AMERICAN BUILDER CHICAGO

*Art Insert for March, 1921—Showing a Seven-Room*

How to plan, build, equip and furnish this beautiful home fully described in this issue. This house goes nicely on a 50-ft. lot; width of main part is 36 feet, and the sun

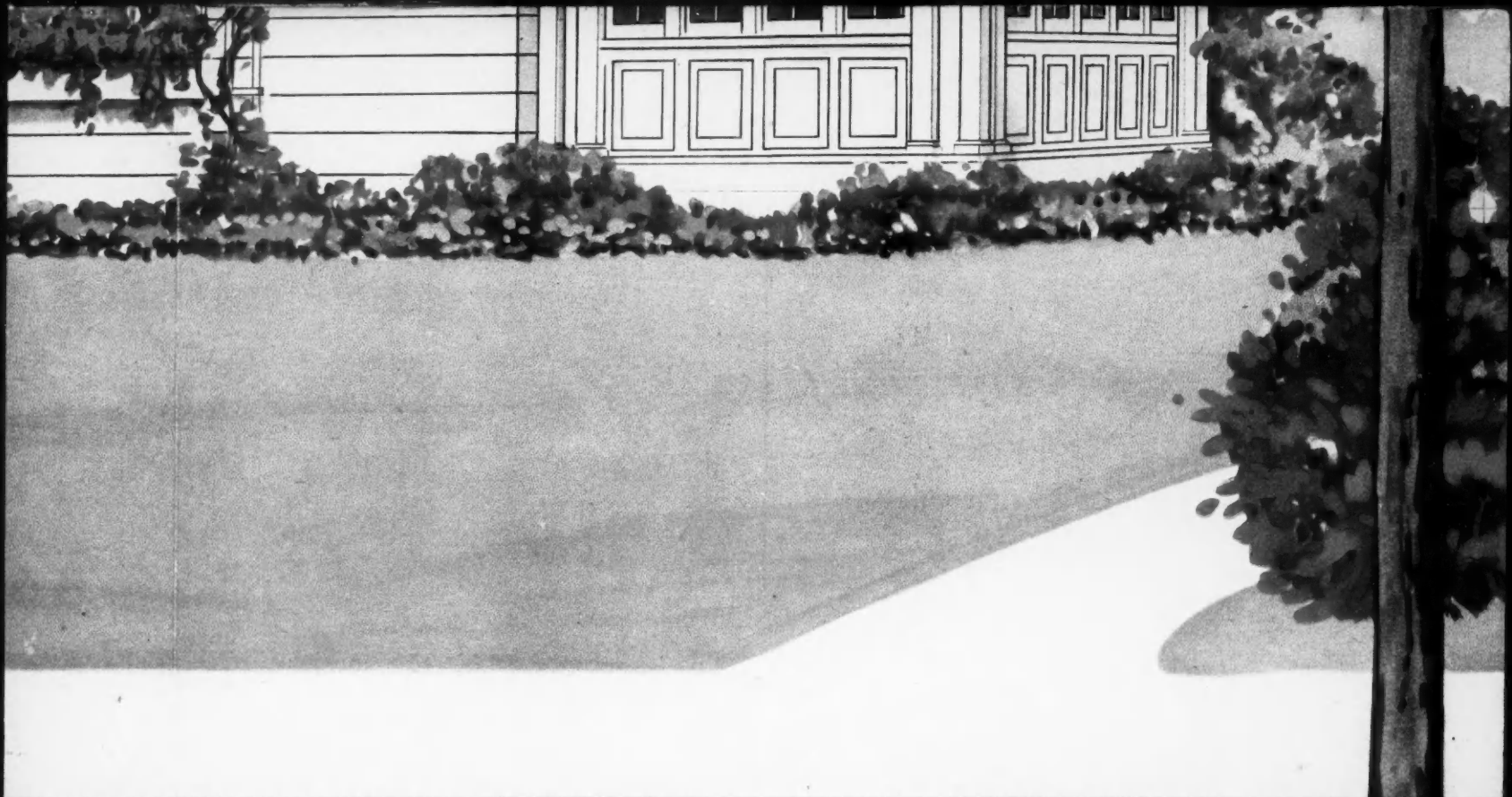
parlor extension is 10 feet wide and is 30 feet long. Not a large house, but one containing a lot of room, convenience and

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# AMERICAN BUILDER

CHICAGO

h, 1921—*Showing a Seven-Room Colonial Home*

and furnish this  
ed in this issue.  
n a 50-ft. lot;  
et, and the sun  
parlor extension is 10 feet; depth of main part  
is 30 feet. Not a large nor expensive house  
but one containing a wonderful amount of  
room, convenience and modern home appeal.

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